VOLUME II, No. 2 FEBRUARY, 1960

EDUCATIONAL RESEARCH

A Review for
Teachers and all concerned with
Progress in Education

SECRETARY'S OFFICE COPY
DO NOT REMOVE

Published for
THE NATIONAL FOUNDATION FOR EDUCATIONAL RESEARCH IN ENGLAND AND WALES
by
NEWNES EDUCATIONAL PUBLISHING CO. LTD.
Tower House, Southampton Street, Strand, London, W.C.2

EDUCATIONAL RESEARCH

Editor:
W. D. WALL
assisted by
ALFRED YATES D. A. PIDGEON
D. W. BELL

Educational Research is published for the National Foundation by Newnes Educational Publishing Co., Ltd., once a term, in November, February and June. The price per issue (post free) throughout the world is 5/6 and the annual subscription (post free) is 16/6.

Subscriptions, orders and advertisements should be sent to Newnes Educational Publishing Co., Tower House, Southampton Street, Strand, London, W.C.2.

Communications on general editorial matters including MSS. for publication, books and other printed matter for review or abstracting should be sent to the Director, N.F.E.R., 79, Wimpole Street, London, W.1.

Note to contributors: Contributions which make a readable synthesis of valid research on the practical problems posed by the English educational system will be particularly welcome. The length of such contributions should be between 4,000-7,000 words, though shorter notes will be considered. Abstracts of theses or similar material should be of sufficient length and detail to acquaint the reader with the main outcomes of the work, the sampling on which it has been based and the experimental statistical and other techniques used. Such synopses should be submitted in agreement with the Head of the University Department concerned.

All papers submitted for publication should conform to the conventional usage of the review and especially to the form in which bibliographical references are given. They should be typed (double space) on one side of quarto paper.

Intending contributors would be well advised in the first instance to send to the editor a brief synopsis of their paper with the elements of a bibliography.

In certain cases it may be possible for the Foundation's Information Service to aid in the gathering of relevant research material.

Only material which has not been published already elsewhere can normally be accepted for publication. The copyright in any material published is retained by the Editor. Reproduction in whole or in part is forbidden except (i) under the terms of the Fair Copying Declaration of the Royal Society or (ii) when specific permission has been given by the Editor.

Contributors receive fifteen off-prints of their article and five free copies of the number in which it appears. Further off-prints may be ordered at cost price when the proofs are returned to the Editor.

The conclusions drawn and the opinions expressed in papers are those of the authors. They should not be taken to represent the view of the N.F.E.R.

VOLUME II, No. 2 FEBRUARY, 1960

EDUCATIONAL RESEARCH

A Review for
Teachers and all concerned with
Progress in Education

Published for
THE NATIONAL FOUNDATION FOR EDUCATIONAL
RESEARCH IN ENGLAND AND WALES

by
NEWNES EDUCATIONAL PUBLISHING CO. LTD.
Tower House, Southampton Street, Strand, London, W.C.2

TEACHING THE MOTHER TONGUE TO BACKWARD AND SUBNORMAL PUPILS

R. GULLIFORD

Education Department, University of Birmingham

Introduction

TEACHERS of backward children have usually made a careful study of the methods of teaching reading and are ingenious in devising more effective ways of ensuring progress in reading. It is probably fair to say that, although the importance of language as such is recognised, much less thought and discussion centres round the theory and practice of teaching the mother tongue to backward pupils. This is reflected in fewer publications specifically referring to the language development of backward children.

Yet there are many reasons why language development should receive a full measure of thought and attention. Words are an essential means of communication and learning in school. Although extra emphasis is rightly placed in the teaching of backward children on learning through concrete, first-hand experiences, on the use of pictures and other visual aids, on demonstration rather than explanation, words cannot be avoided altogether. Nor could we possible wish it, for a widening vocabulary and a greater command of the mother tongue are both the evidence of, and the means to, intellectual growth.

Language is basic to so much of school work. Reading readiness, reading with comprehension and the quality of written expression depend on the acquisition of a meaningful vocabulary and on a reasonable level of oral expression. Every subject in the curriculum has its own special vocabulary and presents its own problems of verbal communication. For example, in the teaching of arithmetic, especially with backward children, the importance of a number vocabulary is increasingly being recognised in relation to the growth of number concepts and to problem solving. In other subjects (for example, in nature study, religious education, practical subjects), it is essential for the teacher to be aware of the " vocabulary burden " of the topics dealt with and to be aware of pupils' levels of comprehension.

Language is also significant for emotional and social development. An increasing skill in language makes possible co-operation with other children in play and other activities, and also influences the nature and quality of play. Behaviour as the child grows up is increasingly modified and regulated by speech. Consider, for example, how the normal infant, or the child with delayed speech, can be more easily disciplined as his speech and comprehension improves (*You cannot do that because . . . You must do this first, then you can have a turn with that . . .*). Although the behaviour of older subnormal children is influenced by training and example rather than by verbal precepts, there is, nevertheless, a need for them to comprehend ideas which will modify conduct. There is, for example, as Tansley and the present writer have shown, value in the discussion of real-life situations in the course of moral education and in the preparation of school-leavers.

The social adjustment of backward pupils is a matter of concern both in school and after leaving school. Two American investigators, Johnson and Baldwin, suggest that the subnormal child in ordinary classes tends to be rejected by his brighter contemporaries; Laycock, in a small-scale enquiry, found the same trend in an English primary school. Teachers of backward children will confirm that their pupils are more likely to be on the fringe of social groups and that co-operation in work and play develops more slowly than with normal children. The ability to talk to others, to listen and to share interests (i.e. to converse) may make the difference between acceptance and rejection. This is probably true of school-leavers. Follow-up studies by Collman and Newlyn, and by teachers attending the course for teachers of E.S.N. Children at Birmingham, show that E.S.N. leavers participate less in social and group activities than do normal leavers. While a proportion of such leavers do mix more or less normally, joining sports and social clubs, many others only make sporadic, tentative attempts at group affiliation and at forming friendships; some are definitely lonely and isolated. Many factors contribute to this state of affairs (e.g. lack of simple games and social skills), but it seems probable that a limited ability to converse in an interesting fashion may be a factor of some significance.

It is also probable that speech and language are factors in work adjustment. The ability to comprehend instructions, a readiness to ask for help and information when in doubt or difficulty, to ask for route and transport directions, being able to use a 'phone, the ability to cope with an interview, are items which need to be included in the programme of preparation for E.S.N. school-leavers. Follow-up studies of E.S.N. school-leavers show that at least fifty per cent. make a reasonable use of their hard-won reading ability when they leave; we need no survey to know that one hundred per cent. of leavers will need to express themselves in, and comprehend, their mother tongue on many occasions every day.

Language as an intellectual tool

But the chief reason for emphasising language development with backward children is that it is so much a part of the whole process of mental growth. Although the learning of backward children must be based on as much real experience and activity as possible, experience and activity are not ends in themselves. As Watts argues in *The Language and Mental Development of Children*, " Experience must be ordered and systematised and here language is able to play an indispensable part with its apparatus for expressing differences . . . this ordering and systematising can best be effected through free and full discussion of all that has been seen, heard, suffered and done." It is precisely this systematising and ordering of experiences in which backward children are poor. They are poor at noticing the features of things in their experience and in perceiving similarities, differences and other relationships. They are, therefore, poor in abstracting, generalising and classifying which are processes in the development of concepts—whether such concepts as *metal*, *vegetable*, or concepts further removed from the concrete such as *punctuality*, *good*.

This poor ability to notice, compare and generalise is, no doubt, a function of the poorer genetic endowment of backward children, but as we shall see later, the homes of

many backward children may be sufficiently unstimulating to limit in some degree the growth of intelligence. In particular, their homes are often verbally limited with little conversation worthy of the name. The intellectual loss is cumulative, for language is not only the means by which experience is systematised; it also promotes the development of intellectual functioning. As Luria points out, " It would be a mistake to suppose that verbal intercourse with adults merely changes the *content* of the child's conscious activity without changing its form," and further " the word thus becomes a tremendous factor which forms mental activity, perfecting the reflection of reality and creating new forms of attention, of memory and imagination, of thought and action." Putting it another way, words are not only the harvest of experience; they modify the child's perception of his world and create higher forms of mental activity.

Simple examples of this can be observed in young children, between ages 4 and 7. The acquisition of new verbal concepts provides new verbal means of exploring their world to add to their well-established means of perceptual and manipulative exploration. For example, a child discovers comparatives and superlatives and many questions follow of the sort " Which is the biggest (fastest, best) in the world." When he is beginning to acquire number language, everything must be counted—the number of forks on the table, the number of prongs on the fork, the number of the people at the birthday party, the number of wheels on the car. Language provides him not only with words to sum up his observations of the world, but also the words are tools which enable him to attend to more features of his world in a more precise and analytic way. The recognition of the importance of speech and language in the development of mental functions and as a regulator of behaviour appears to be the reason for the attention given to speech in Russian psychological research. The idea is, of course, implicit in the writings of Susan Isaacs, Piaget and Inhelder and others. Thus, Susan Isaacs remarks about the children in her school, " They were always free to say what was in their head, to ask questions and to argue. This opportunity to express thoughts and feelings undoubtedly fostered both their verbal reasoning and their objective interest in the world." Terman said: " Language is the shorthand of the higher thought processes, and the level at which this shorthand functions is one of the most important determinants of the level of the processes themselves."

Two conclusions can be drawn from this brief discussion of the relationship between language and intellectual growth. First, that language development should be a focal point in thinking about the education of E.S.N. and backward children. This does *not* mean that their education should be verbal, abstract or academic. It re-affirms the primary importance of activity and experience but stresses the function of language as a means of systematising experience and developing the mental functions for doing so. This point of view could be a corrective to the view, which is sometimes implied if not stated, that backward children are practical rather than verbal and that therefore in teaching them we should concentrate on the development of practical skills, accepting their verbal limitations as the inevitable consequence of their low intelligence.

The second conclusion we may draw is that the first practical step in the teaching of the mother tongue to backward children is the recognition that language growth is a part of mental development as a whole. As Watts again puts it, " No genuine enlarge-

ment of vocabulary can come about except through an enlargement of understanding and no real skill in the use of language can come about except through its use in meeting the need to express thought and feeling."

The assessment of language development in backward children

Observation of backward children leaves no doubt that their standard of speech and expression is poor. It is unfortunate that their deficiencies in vocabulary and expression have not been studied more intensively so that remedial measures can be more precisely planned. One reason for the lack of detailed information is the lack of suitable measures of language attainments. There are some vocabulary tests which can be used with advantage. Watts' *Vocabulary Test for Young Children*, with norms from 4 to 8½ years, is suitable for backward children of junior age; it consists of 100 words grouped according to topics. Although it would be too time-consuming to give to many children, it is certainly worth giving to a few if only to increase the teacher's awareness of children's lack of knowledge of quite common words. The *Crichton Vocabulary Scales*, designed for use with the Raven's *Progressive Matrices*, are also worth using.

A method for assessing maturity in the expression of ideas would also be an advantage. Watts has published an *English Language Scale* consisting of a graded series of pictures designed to elicit different levels of sentence formation in children's descriptions. This has proved reasonably satisfactory in use with backward children. Teachers specially interested in this aspect might like to refer to the *Little-Williams Language Scale* for children up to ages of 6 and 7. It would be a distinct asset in the teaching of the mother tongue to have other methods of assessing, perhaps by detailed observation, the maturity of language usage. Test results in reading, spelling and arithmetic point clearly to the extent and nature of pupils' failure in these attainments, but a measure of the extent of language retardation is not so easily obtained. For that reason it tends to cause less concern, except in cases of outstanding deficiency or speech defect.

The language attainments of backward children

One measure of the verbal retardation of backward children is provided by the comparison of verbal intelligence test and performance test results. It is often said that backward children are practical rather than verbal. Some support for this view may be obtained from the claim that many backward children do better on performance tests than on verbal tests. Thus, Duncan found in his rural residential school that the average verbal quotient was 66 (Range 54-76) whereas the average performance quotient, using the *Alexander Performance Scale*, was 96 (Range 67-119). Duncan believed that these results showed that the " inferiority of this group is much more a verbal than a general inferiority." Since these children had practical abilities within the normal range, he believed that their education should utilise these abilities. " That their educational attainments have been low is due to an educational approach through the medium of words, their weakest factor." Accordingly, he evolved graded series of activities involving problem-solving and relational thinking in practical activities. He discarded repetitive crafts and stressed handwork media which necessitated planning, thinking in sequence and perceiving relationships. Practical work was correlated with academic subjects—for

example, reading was motivated by the need to read instructions on assignment cards for different practical activities. The method appears to have met with considerable success in terms of attainments; but many practising teachers have voiced the same doubt as Kirk—whether the children studied by Duncan are typical of E.S.N. children as a whole. Duncan admits that his results may be affected by a cultural factor since his pupils were drawn from a mainly rural area which might favour the development of practical rather than verbal abilities. It is interesting to compare, therefore, results obtained by Tansley, who examined 117 E.S.N. children in Leeds with the *Terman-Merrill* and the *Alexander Scale*. His results showed a less marked performance basis: average Verbal quotient 67 (Range 53-87), average Performance quotient 77.7 (Range 50-122). In a preliminary report on annual testing of Sheffield E.S.N. children with the *Wechsler Intelligence Scale for Children*, Portwood states that the average performance quotient obtained was lower than the average verbal quotient. Further reports of this study will be awaited with interest.

Verbal performance test discrepancies have aroused much discussion and investigation, in particular, their diagnostic value in relation to brain-injury and cultural deprivations, and in the prognosis of social and education achievements. Pringle and Bossio gave the *Wechsler Intelligence Scale for Children* to groups of deprived children aged 8, 11 and 14, in a large children's home. At each age group, average performance quotients were significantly higher than average verbal quotients. From their data, they were able to draw the conclusion that early separation and severe emotional deprivation had a significantly deleterious effect on verbal development.

It is clear that the significance of verbal performance test discrepancies is not capable of simple elucidation. Many factors have to be taken into consideration. As O'Connor remarks (in Clarke and Clarke), " so many variables enter into these comparisons that critical experiments have not yet been carried out." It would, however, seem advisable wherever possible that the examination of E.S.N. children should include a performance test and cases of marked discrepancy be the subject of further study. Low verbal scores may be due to one or more of several causes—slight hearing loss, some degree of emotional and social deprivation, or environmental and educational handicaps. Remedial attention to the weak language functions might have beneficial results as well as an educational approach through practical activities in the way described by Duncan.

An impression of the child's verbal ability can also be obtained from the quality of his responses to the verbal items on a test such as the *Terman-Merrill Intelligence Scale*. Qualitative differences may not affect the total score on the test. For example, the word " orange " in the *Terman-Merrill Vocabulary Test* obtains one mark, whether the response is a simple description (it's got pips and it's juicy) or refers to use (you eat it) or an abstract definition (it's a fruit). More use could probably be made of these qualitative differences in responses. In one investigation, Papania scored vocabulary responses in a way which differentiated between concrete and abstract definitions of words. He found that mentally retarded children of a given mental age could define as many words as normal children of the same mental age but at a lower level of abstraction. Badt, using a similar system of scoring for responses of institutionalised mentally retarded children, was able to show that the longer the period of institutionalisation the lower was the level of abstrac-

tion. It would be interesting to see further research on the relationship between level of abstraction in word definitions and such variables as age, mental age, and various environmental factors, such as the quality of the child's verbal background. This refined method of scoring vocabulary tests could also be used to assess progress in an intensive programme for language development.

From the point of view of practical teaching, information is needed about the characteristic deficiencies of the oral expression of backward children. A useful procedure which can be applied to a few children in a class is to record either in shorthand or by means of a tape-recorder short periods of spontaneous conversation, or an account of a recent event. Observations from such records[1] and deficiencies noted by Abel and Kinder, Descoeudres, Ingram, Kirk and Schonell are combined in the following summary:

Slovenly or lazy speech

Careless pronunciation, elision of words, and omission of endings (for example, " warra " for " what I," " gonna " for " going to ") is common with backward children. It is interesting in this connection that in a phonetic analysis of articulatory defects in feeble-minded children, Bangs found no marked qualitative differences in their defective speech-sounds in comparison with those of intelligent speech-defective children except for the more frequent omission of final sounds. Poor models of speech in the home environment are one cause of this careless speech, and it is probably related as well to that general slackness and poor motivation of the subnormal which manifests itself in other ways, for example, in poor posture.

Grammatical errors are, of course, frequent. It is, however, a feature which is less important than the way words are put together to express meanings, i.e. clarity and effectiveness of expression is a more important aim for these pupils than grammatical accuracy. In *Backwardness in the Basic subjects*, Schonell, quoting from Lyman, gives a useful list of the most frequent errors in oral expression, and concludes that 45-62 per cent. are in verb forms (subject-verb relationships, tenses), 50-80 per cent. of the errors being in the verbs " to be," " to go," " to see," " to do," and " to come." Most of these errors reflect the normal speech in the child's home environment but some, such as giving regular endings to irregular verb forms, are common in the speech of normal infants and persist longer with backward children owing to their slower maturing. The remedies are unobtrusive correction (especially in group work) and plenty of practice in talking within the classroom so that the child hears and practices the correct form. There is probably much less transfer of the correct form from written exercises to speech than is usually assumed, but experimental investigation of this with backward children is lacking.

Imprecise or over-generalised use of words

Incorrect use of words occurs because children have an imperfect or vague understanding of the meanings of words. For example, a 12-year-old backward boy described a picture of a thermometer as a temperature; on the *Terman-Merrill Scale Vocabulary Test* eyelash is often confused with eyelid, scorch with scald; in the *Picture Vocabulary Test* of

[1]Material collected and analysed by J. Steel, J. Sloan, G. Bithell and Miss H. Humber in the course of preparing Dissertations for the Diploma in the teaching of ESN children, University of Birmingham.

the same scale, leaf is often named a flower. This vagueness and lack of precision in the use of words is often noticed by teachers of backward children. Descœudres, in " The Education of Mentally Defective Children," gives many examples of the tendency and as she says, " If we have found confusion and misuse of terms in the realm of concrete things, it is not to be wondered at that more abstract terms relating to school work are also misused." The same tendency to over-generalise the use of words is described by Luria in his interesting account of experiments with a pair of speech-retarded twins. Records made by students at Birmingham have also produced evidence of confusions in the use of pronouns and prepositions.

Fluency

There are some backward children who appear fluent in the sense that they speak freely and quickly. Some of these quick speakers ramble on with few pauses and with poor sentence formation. These are the children who tell a story or recount experiences in a form which is often incomprehensible to the teacher although the other children appear to be able to follow it with enjoyment.

Other children are slow and hesitant in expression. This seems partly due to difficulty in thinking. They pause, trying to find a word or name which eludes them and, failing to find it, they try to say what they want in some other way, or to get over the difficulty by gestures or by looking hopefully at the teacher for help. Phrases such as *What's it* or *That thing* are often used to cover the difficulty. The slow thinkers often start a sentence anew and try to form it another way. In one of the most useful articles on the speech of E.S.N. children, Renfrew discusses these difficulties and suggests the tendency of adults to supply the missing word may tend to perpetuate lack of effort in finding words and expressing ideas. Here again, further investigation is needed. How far is the tendency due to insufficient practice in expression, or just a symptom of immature speech development (the characteristic is common with young children) or due to some more fundamental cause?

Other children lack fluency because of an emotional reluctance to talk: the timid, unforthcoming child, and the child who is virtually a non-talker because of a more serious emotional disturbance. These children emphasize that the improvement in the use of the Mother Tongue must take account of personality as much as intellectual factors.

Sentence formation

The development of the sentence in the speech of normal children, especially younger ones, has been the subject of many studies and has been well summarised by Watts. The type of sentence structure used by backward children would repay study for the extent to which children use more complex forms is an indication of the maturity and clarity of thinking. Tentative conclusions based on material collected by students at Birmingham suggest that the level of sentence structure is at a much lower level than would be expected for the ability of the children. Oral and written expression of senior backward children often consists of sentences strung together by *and* or *then*, a charac-

teristic which is common with normal children at the infant stage. Thus, a 12-year-old boy in a D-stream wrote:

> " The picture reminds me of a man coming down the road on a motor bike and he crashed into a lorry and the men got out of the lorry and picked him up and the man on the motor bike cut his leg open and my friend and I went to school when we saw the accident happen and the policeman came with a book and a pencil and policeman copied something down and the glass on the motor bike was broken and a man went in the phone box to phone an ambulance and an ambulance came and the man went away to hospital and the bell went and we went in the hall for assembly."

In the samples of written work by backward children from which this was taken, there were many boys who used a variety of dependent clauses, the order of frequency being: time, noun, result, reason, adjectival, condition. This conforms to the order obtained by Watts for children under 11 years. His order for senior children was: time, noun, adjectival, reason, result. Compositions, like the one quoted, consisting of simple sentences joined by *and* seem to indicate that events are perceived in a disconnected way or as a simple sequence. This might be remedied to some extent by giving plenty of opportunity for describing and discussing events, processes and experiments in various aspects of school work. The infrequency of adjectives and adjectival clauses points to the need for more practice in noticing qualities and finding words to describe them.

Lack of selection and sequence

It will be noted in the example quoted above (which is by no means the poorest example of its kind) that there is a tendency to put everything into the account. The writer cannot select or condense and the events are not put into correct sequence. As M. M. Lewis points out, logical order comes more easily if there is an audience being addressed. In other words, logical order is fostered by purposeful oral work. The re-telling of stories and giving accounts of observed processes are activities which should help in the better ordering of expression.

These characteristics of the oral expression of backward children need further study so that the English scheme for backward classes shall not be merely a reduced version of A- and B-stream work but shall be designed specifically to meet the needs of backward children.

Speech defects

One aspect which has been studied fairly thoroughly is the incidence of speech defects in backward children. Surveys consistently show a higher incidence of defect in backward children. Thus, Burt found that speech defects occurred in 1 per cent. of normal children in his London surveys, in 5 per cent. of dull children, and in nearly 11 per cent. of subnormal children. A parallel survey by Lloyd found speech defects in 0.5 per cent. of the normal group, 5 per cent. of the dull, and nearly 15 per cent. of the sub-normal. Sheridan, examining 100 subnormal children aged 11-13, found 24.5 per cent. of the girls and 41.8 per cent. of the boys had defects. Tansley surveyed 155 boys

and 92 girls aged 7-16 in an E.S.N. school, and found that 37.4 per cent. of the boys and 20.7 per cent. of the girls had speech defects ranging from consonant mispronunciations or substitutions to complete unintelligibility. The figures obtained vary because of different standards adopted and differences in the populations examined, but there is no doubt of the need for speech therapy to be readily available in E.S.N. schools and classes, and even more for the work of the therapist to be supported by adequate attention to speech in the classroom. Close co-operation between the therapist and the teacher is needed in the case of articulatory defects to ensure that sounds elicited by the therapist are used and practised in class. In cases of stammering, the class teacher can do much to provide an atmosphere free from emotional tensions and can help to promote a more secure and confident personality in the stammerer. Children with delayed speech or with language retardation will be helped by language activities in class which create the need and stimulate the desire to speak. Renfrew, writing with ten years' experience of speech therapy in E.S.N. schools, stresses that the problems with backward children is not simply one of correcting defective articulation. Even when these children have been taught to articulate, they remain *in*articulate in their ability to express themselves. Paucity of vocabulary and reluctance to express restricts the amount of practice in articulating the correct sounds.

The same point applies to speech *training*, which is still sometimes thought of rather as drill in correct and clear enunciation than as the attempt to foster clarity and adequacy of speech and expression. Modern speech training texts conceive speech training in broad terms—see, for example, texts and teachers' handbooks by McAllister, Bennett and Bruford.

The causes of retarded language development
Environmental factors

Many surveys, notably those of Burt, have shown that backward children are more likely to come from homes in the lower socio-economic groups. One effect of this is that their range of experience tends to be more restricted to their immediate environment—fewer journeys, holidays, and visits to places of interest. Books, play materials and opportunities are more limited. This affects vocabulary growth, for as Watts suggests, a rich and varied environment favours the acquisition of nouns, interesting activities that of verbs.

A narrow range of experience also means that children have less to talk about among themselves and in oral work at school, with the result that they have less practice in expression. Since Burt's surveys in the 1930's, changes in social conditions have probably reduced the experiential handicap of backward children, but the crucial difference between the good and poor home remains—the extent to which parents go over experience with children in conversation, respond to questions and tell stories. This is the essential handicap of the backward child from the poor home and it indicates that one of the chief functions of the teacher is to make up for this deficiency by plenty of discussion of experience, reading and telling stories.

The other effect of the poor home is the poor example which it provides of standards of speech and expression. As Ballard put it, " The teacher must make it more natural for the child to speak the mother tongue than to speak with his mother's tongue." Cer-

tainly, many of the errors of usage and some articulatory defects are copies of the speech of the neighbourhood. The fact that teachers often claim that children have one speech for home and another for school indicates that progress can be made in overcoming this.

The effect of low intelligence

The earlier discussion of the importance of language for mental and educational growth referred to the fact that backward children are mentally less active in relation to their experience. Their slow verbal development is partly the result of deficiencies in those mental functions which are involved in concept formation. But in considering the contribution of low intelligence, it should be recognised that inadequacies in the environment of backward children may have affected not merely their skill in the use of the mother tongue but also the development of intelligence itself. There are, as Hebb put it, two determinants of intelligence: the innate potentiality for development (Intelligence A) and a completely necessary stimulating environment. Interaction of the individual with his environment makes possible the development of Intelligence B within the limits set by Intelligence A. We may reasonably question whether the environmental conditions of all backward children have been adequate to maintain their maximum mental growth. We know little with certainty about the stimulation needed for the full development of Intelligence B, but it is probable that among the most important factors is the quality of verbal experiences in the home, especially the amount of talk with averagely intelligent people. Investigations which have a bearing on this point have already been referred to in this journal (Vernon; Lynn) and are summarised in Clarke and Clarke, and Tansley and Gulliford.

The main point for the present discussion is that it is not enough to say that backward children are retarded verbally because of their low intelligence since both their low intelligence and their verbal retardation may, to some extent, be attributed to the same environmental causes. In tackling their language retardation through an intensive programme of language experiences it may be possible to promote a somewhat higher level of mental functioning. This is a hypothesis which requires further experimental investigation.

Two investigations which have a bearing on this point can be referred to. In an experiment reported in 1942, Dawe described the results of an intensive programme of language experiences and training with a group of orphanage children aged 3½ to 6 years 10 months. There were twelve children with I.Q.'s ranging from 65 to 92 (mean 80.6). At the end of the seven months experimental period, the experimental group had made considerable gains in language but also in intelligence test scores, the mean I.Q. having risen to 94.8. The control group, however, showed a slight (non-significant) loss in I.Q. Dawe gives a fair amount of detailed information to show that the experience and the amount of personal attention provided in the orphanage were considerably less than those given in normal homes, and it is not surprising that gains in verbal and mental test scores were recorded. Similar experiments, using backward children living in their own homes, are needed. One such investigation has recently been reported by Kirk. Eighty-one mentally retarded children aged 3-6 years, with I.Q.'s in the range 45-80, were studied over periods of three to five years. Forty-three of the children were included in

experimental groups given what amounted to a good Nursery school experience aiming at the promotion of physical and mental health and the stimulation of intellectual and verbal activity. In a cautious evaluation of this pre-school programme, Kirk claims that it had positive results in the rate of children's development, and that accelerated rates of growth were most marked in children who had experienced degrees of environmental deprivation.

These, and other investigations, offer some evidence to support the view that an enriched curriculum for backward children coming from inadequate home backgrounds may not only enable them to make the best of their intelligence, low though it may be, but also promote a degree of acceleration in mental growth in at least *some* children whose experience has been limited either by an impoverished environment, or by emotional and social deprivation.

In trying to secure the best conditions for the growth of language in backward children, other consequences of low intelligence should be noted: for example, a late start in speech. According to Burt's surveys, the subnormal begins to talk at an average age of 2.3 years, the dull at an average age of 1.5 years. One may question, too, whether parents of late talkers provide the kind of speech stimulation which they would have found natural to give to a baby beginning to talk. Certainly, in clinical work, one feels the need to stress the importance of parental stimulus and response in the early stages of talking. A further, and more serious consequence of late development is that the backward child arrives at school age with language at a 3- or 4-year level. Subnormal children at the age of five are at the stage when, as Renfrew has pointed out, their language still requires the individual relationship with mother and such experiences as going shopping, visiting, helping in the house. Instead, the mentally retarded child has to compete in large classes with brighter children who are quicker to express themselves, and secure attention. It is also important to realise that at this stage the dullest children may well be too immature to benefit fully from the stories, rhymes, and other verbal experiences of the infant school and that these should be repeated in the junior school backward class. It is, indeed, noticeable how the simple fairy stories and folk tales are enjoyed by very much older backward children.

Emotional and social factors

Emotional conditions influence language development at every point. Learning to speak begins in the close relationship between mother and child in infancy; disturbances in that relationship can impede language growth, as the studies of deprived children show. Schonell emphasises that, later in childhood, critical, domineering or neglectful parents can have an inhibiting effect on expression. It is all the more important, therefore, that the atmosphere in school should be one which favours expression—a relaxed discipline, opportunities for finding emotional satisfaction through successful achievements, and outlets through creative and expressive activities.

The poorer social development of backward children has already been referred to and indicates the need for the school to provide opportunities for backward children to learn to work and play together, to develop the interests and the simple games skills which promote friendships and group participation. Language is essentially a social pheno-

menon and children who are withdrawn or socially unaccepted need to be drawn into the group so that their poor social adjustment does not continue to be an additional handicap in verbal development.

The effect of backwardness in reading

The importance of language development for reading has often been stressed. The reverse effect of low reading attainment on language growth has equally to be considered since it cuts a child off from one of the main sources of general knowledge and vocabulary growth, as well as of the awareness of sentence patterns for the expression of ideas. This is a further justification for an ample programme of reading to children to compensate for this lack.

One of the topics which merits investigation is the adequacy of the backward child's comprehension of what he reads. In the early stages of reading, the teacher often pauses to discuss the meanings of words and ideas in the text. With better readers, the same need is there but comprehension is more likely to be checked by written comprehension exercises. For the purpose of language development, continued efforts should be made to check on new meanings encountered and to discuss individually and with the class as a whole what has been read.

Methods of teaching

The foregoing discussion has indicated what the main features of a good language programme should be. It must be based on an enrichment of experience and on plenty of opportunity for working over that experience in conversation and discussion. Compared with average children, the backward need more guidance from the teacher to observe and to think about what they observe. They need more definite help in the building up of simple concepts and the related vocabulary. Since language is not merely an intellectual function, pupils' emotional and social development must be promoted through good teacher-pupil relationships, co-operative group work, and opportunities for creative and expressive activities.

Vocabulary development

McKee gives a summary of suggestions for the development of vocabulary and comprehension which is typical of the recommendations in this field.

1. Rich, varied and meaningful experiences.
2. The use of pictures and drawings.
3. Opportunity for informal discussion for the exchange of experiences and ideas, for questioning and simple explanations.
4. Much simple explanation by the teacher of new and partially formed concepts.
5. Determined effort to make the child feel dissatisfied with lack of meaning concerning anything he encounters and to encourage him to ask frankly for such meanings.
6. Much oral reading and story telling by the teacher in which new concepts and meanings are presented in sufficiently familiar settings to ensure clear understanding.

The fifth suggestion is perhaps the most difficult to apply with backward children, yet it is a very necessary one since such children are more prone than others to accept that they do not understand something. One wonders how far this is due to their inborn limitations and to what extent it is a product of their experiences of failure, not only in school but, in more subtle ways, in their pre-school lives.

The first requirement is the widening of experience and activity. As Ingram points our, there are three kinds of experience: at first-hand, at second-hand, and the experience of expression. All those who have written about the education of backward children stress that backward children, owing to the concreteness of their thinking and their limited background of experience, need as much first-hand experience as possible—by the observation and handling of real things in the classroom, by visits and school journeys. This needs to be supplemented by adequate second-hand experiences—pictures, models and other representations; wireless, T.V. and visual aids; and by hearing stories. The experience of expression is needed not only as a means of " checking impressions " but as a means of enlarging experience through dramatisation and creative work.

The type of experience must be determined according to the age, maturity and previous experience of the children. Thus, in her account of speech work with groups of E.S.N. children aged 6-9 years, Renfrew suggests that the youngest children had missed, at the time when they could have benefited most from it, the opportunities of prolonged contact with mother in the course of daily routines of home life. The speech sessions, therefore concentrated on experiences of home and family, shops and food. Shopping expeditions were undertaken, and walks round the neighbourhood, observing and discussing the ways of domestic animals, the contents of gardens and other features of the immediate environment. It is certain that older children need similar discussion of quite ordinary things and events which, with ordinary children, would be taken for granted. Senior children need to be made increasingly aware of the life of the community around them and in the larger world. MacDonald recommends that the teacher should read news items from the daily paper regularly to the class, as a starting point for discussion which often prompts children to follow the news on following days. With children approaching school-leaving, Tansley and Gulliford refer to the need for works' visits and other experiences for increasing the comprehension of working life and its related verbal demands.

Ordinary school activities provide many opportunities for vocabulary growth—the names of tools, materials and processes in practical work, housecraft, gardening; of the natural world in nature study and elementary science; of the community in social studies. The underlying aim should be the development of understanding, and the attainment of maturer levels of concept formation. The probability that different school activities can contribute their share to the development of understanding should be borne in mind. One of the five principles enunciated by Descoeudres for the education of backward children was that of *correlation* or *concentration*—the grouping of subjects around a central theme. She believed that this was even more necessary with backward children than normal children in order to assist and strengthen the formation of associations.

One way in which this concentration might be achieved would be to adopt a suggestion made by Dolch. In a reaction from word lists composed on the basis of frequency

in children's speech and reading, he suggested that vocabulary lists for fields of interest should be prepared. These should be used as a guide in the course of teaching, the aim being to develop depth of meaning rather than a superficial breadth of vocabulary. The need for the teacher to have in mind such a list of words in the teaching of number has been emphasised by Kirk. Vocabulary control is an accepted principle in teaching reading; more use might be made of it in following vocabulary development—so long as such lists are used as a guide and not as a basis for cramming. Words are only truly useful when they are integrally a part of concepts.

There is an extensive literature on the subject of word lists, compiled on the basis of frequency in speech, writing and in reading matter. It is useful for the teacher of backward children to have some knowledge of this work if only as a means of making him more conscious of the vocabulary he uses when talking to pupils. Burrough's study of the vocabulary of 6-year-old English children is useful for reference and includes a summary of research in this field.

Class organisation

In the process of systematising experience and building up vocabulary, as we have pointed out earlier, social and emotional factors are important, and the attitude of teacher to children and children among themselves can inhibit or favour expression. The organisation of the class needs, therefore, to be one which produces a happy, free atmosphere in which children are encouraged and eager to speak. In addition, many writers urge the necessity of arranging for speech work in small groups. Humber, working with small groups for conversation in an E.S.N. school, felt that the small group was necessary if the reluctant talker was to be drawn into the conversation. Moreover, in the small group the teacher could more easily make unobtrusive correction of errors and suggest better choice of words and sentence patterns when needed. Both Renfrew and Dawe confirm the value of the small group, Dawe stating that groups had to be kept small if real benefit was to be obtained from visits. These three were working with junior children and were obviously aiming at providing that quality of verbal interchange which takes place in the good family. But A. E. Smith, writing about the development of speech at the secondary level, makes a similar plea for group work. He remarks that the need for group work is well-established in reading and arithmetic and that it is just as necessary in the case of talking. Staffing ratios, of course, make this suggestion difficult to carry out, but it might be worth bearing in mind that just as small remedial groups are often organised in reading, small speech groups might also be arranged for backward talkers. One other way of arranging for groups has been suggested by Schonell—the occasional division of the class into conversation groups, which can be so much more effective than full class discussion.

These groups could be composed on a sociometric basis in the way that has been shown to be effective for group writing of plays and stories in an experiment by Richardson. One other practical measure is to take News Time with the younger children in a small group round teacher's desk while the rest of the class are engaged in other activities.

Stimulating oral expression

The provision of a range of interesting experiences is a first step towards better oral expression so that pupils not only have something to talk about but are more eager to do so. In addition, many English textbooks offer useful suggestions for stimulating talk, for example, in *Fluent Writing and Speaking* and *Let's Talk*. In *Backwardness in the Basic Subjects*, Schonell lists nineteen activities for oral English. The main ones are the use of pictures; accounts of films, stories and incidents; dramatisation; story-making; lecturettes; giving directions; telephoning activities; and visits to other classes with prepared oral activities. Schonell is viewing oral work here as an indispensable preparation for written work although he emphasises that not all oral composition need be a preliminary to written work. One of the useful points he makes about the value of oral work is that it should provide " an expressional situation for the development of the personality," i.e. that the readiness and ability to express depends on personality factors as well as on having something to say. Timidity, withdrawal, and emotional inhibition have to be overcome as much as purely verbal difficulties. In this, other aspects of the curriculum (drama, puppetry, movement, art) can play a part, developing more confident and out-going personalities better able to express themselves. The contribution of movement, mime and creative drama in stimulating the imagination and allowing for the expression of thought and feeling in non-verbal ways is hard to measure but experience confirms its value (see Bruford). As this type of work develops, the contribution becomes a direct one, through verbal expression in drama, puppetry and story-making. In this type of work, it is essential to remember that backward children have more need of hearing stories than most normal children owing to their limited verbal experiences at home and their poor reading ability.

A plea for a well-planned approach to talking is made by A. E. Smith in *English in the Modern School* and many of the suggestions he makes can be applied to backward classes. He insists on four requirements for stimulating discussion: the *right topic*—one in which the pupils are already interested and informed or can easily be made so; *the right occasion*—one arising naturally out of work in hand or projected; out of the child's immediate environment or from his immediate or future needs; *the right atmosphere*—one free from formality or any restraint save the conditions imposed by good manners; the *right objectives*—the importance of clarity, relevance and order before correctness of usage. His insistence on the need for plenty of practice in conversation and discussion at the secondary stage is most welcome, and also his admission that the task of the teacher in this respect is not easy. " He must be initiator, participant, mentor and critic, finding a balance between these roles to ensure that the talking is more than idle chatter." This is in contrast with the fear expressed by some teachers that discussion may be a waste of time or that Head Teachers and H.M.I.s will think it so. This type of work produces little tangible evidence of the time spent whereas written exercises, often of limited value, give a sense of achievement. Yet with backward children even more than with normal children attention should first be given to oral work.

Systematic training

In teaching the mother tongue to normal children, the main direction of effort is the planning of experiences about which children can talk, and creating the conditions

for motivating talk. With backward children, there is, in addition, a need for more definite training. In her account of work with junior E.S.N. children retarded in speech, Renfrew reports that organising interesting experiences and activities did not always lead spontaneously to expression. Activity was apparently satisfying for its own sake, needing no words to express it. Simple " games " were, therefore, organised which involved acting on simple instructions and requests (such as " Hide the thimble "), followed by the child being expected to say what he had done. She reports that this work often revealed difficulties which the therapist had not fully appreciated before—the pupils' difficulty in listening to instructions and their imperfect comprehension of common words. For example, the instruction " Hide the thimble behind the waste-paper basket " revealed confusion between " shopping basket " and " waste-paper basket " and a lack of understanding of " behind "—as well as other prepositions. Nouns were always easier for the children to understand than verbs; for example, pat, stroke and rub were difficult to distinguish. Getting the children to say what they had done showed that their lack of adequate speech was not just due to emotional reluctance to talk but to an inability to find words to sum up situations. At first, they would reply by gestures and a verbal response had to be suggested to them. After some weeks, they began to attempt their own spontaneous descriptions.

Kirk also states that specific help is needed in learning how to form sentences in speech. He gives the example of the child being asked to say what his father does. The first response may well be " Works." Further questioning may elicit, " In a factory " and " makes shoes." Kirk suggests that the teacher should then put the ideas into a sentence and then get the child to " Tell all about it," eliciting the sentence " My father makes shoes in a factory." Kirk wisely cautions against the notion that sentence length can be developed mechanically; it should be done in natural purposeful situations. The small conversation groups previously referred to can do much work of this kind.

Kirk also suggests giving instructions to pupils to carry out a simple activity and then having them recount to others what they have done. A natural place for this kind of training can be found in many aspects of school work—in practical work, science and physical education. Oliver quotes an E.S.N. boy's description of an exercise he had invented in P.E.: " *First you lay on your stomach on the log. Then you tighten your back mucels you shape yourself like a banana and at the same time try to put your little fingers together and do not forget to keep your balance stay there for five seconds.*" Work of this kind should help to promote the development of logical order and the use of more mature sentence forms. As we have seen, backward children are more likely to perceive and describe a sequence of events in a simple, unconnected sort of way. The description of actions which they have just performed or seen performed is one context within which to suggest the use of dependent clauses and for the audience to point out the need for logical order. In this connection, M. M. Lewis's suggestion for the greater use of diagrams in oral and written English merits consideration. He points out that there is usually plenty of work with objects and pictures in the early stages of language work and that the next step is usually for the child to deal with what he has seen but which is no longer in front of him. He suggests that an intermediate stage is needed in which the child should learn to arrange his mental picture first in order to be able to express it. He feels that for this purpose, especially with backward children, there is value in diagrams.

Practice in classification and fluency in recalling words are also recommended by Kirk. " How many animals do you know? " " What things do you eat ? " In the development of a number vocabulary—such words as *shorter, longest, middle, biggest*—he suggests the use of a tiered shelf of three layers, children being given instructions to put, for example, the smallest toy on the longest shelf. Further discussion of the means for developing number vocabulary are given by Tansley and Gulliford. Renfrew mentions practice in expression from specific tasks such as finding differences between two similar objects—two pencils, two buttons, two cups. At first, it was found that the noting and expression of differences had to be prompted by questions such as " Are they the same colour? Are they made of the same stuff? " Specific training in the discrimination and expression of differences is reminiscent of some of the activities advocated by Descoeudres. In her exposition of methods with backward children, there is a combination of formal methods side by side with " the utilisation of the natural activity of the child."

The language programme used by Dawe in the experiment referred to earlier was also a combination of definite training with experience and activity methods. There were four types of training: 1. Training in the understanding of words and concepts. 2. Looking at and discussing pictures. 3. Listening to poems and stories. 4. Going on short excursions. In the first section, 1,455 words were chosen from some of the well-known word lists and then classified into related groups. These words (not necessarily all of them) were then studied in individual training periods during the seven months of the experiment, to find out words which the child did not understand and to explain the words, demonstrating them or teaching them in some meaningful way (e.g. by using pictures). Dawe stresses that these were not cramming periods. She endeavoured to make them interesting conversationally and to ensure understanding and comprehension throughout. In group training periods, the children went on excursions, heard stories and discussed pictures. The experimenter attempted at all times to introduce, and explain where necessary, new words and phrases as much as possible. She also attempted to stimulate curiosity, to help the children think critically, to notice relationships, causes and effects and to eliminate careless thinking and speech.

The methods differ little in essence from many of those used in teaching the mother tongue in good backward classes but it was intensive and there was a more systematic introduction of words and concepts, ensuring that several experiences were focussed on the meaningful acquisition of new words. An important difference, of course, was that the experimenter was able to offer training individually and in small groups. It would be interesting to see experiments of similar, intensive kind in ordinary backward classes, adapting the methods for larger numbers.

Conclusion

The language development of backward children is of major importance partly because of its educational and social value but mainly because it is closely linked with intellectual development. Backward children are slow to develop those mental functions upon which concept formation and vocabulary development depend. They are further handicapped by a late start in speech, by retarded language abilities on reaching school age and by the later development of reading skills. In addition, backward children

are more likely to come from homes which are verbally unstimulating and to make poorer emotional and social adjustments. More research is needed into these factors and into their interaction so that their effects can be minimised in practice, and a fuller understanding of them lead to improvements in teaching methods.

The range and quality of vocabulary in backward children requires further study, for example, in relation to the verbal demands of particular aspects of the curriculum, and the child's needs in post-school life. Investigation is also needed into the way of promoting more mature and orderly forms of expression, particularly in facilitating the transition from action to words, experience to expression. Such experiments should not, of course, be merely coaching but should be based on sound educational and developmental principles.

Bibliography

ABEL, T. M. and KINDER, E. F. *The Subnormal Adolescent Girl.* New York: Columbia University Press, 1942.
*ANDERSON, V. A. *Improving the child's speech.* New York: O.U.P., 1953.
AXFORD, W. A. *Handicapped Children in Great Britain.* Special Subject List, No. 30. London: Library Association.
BADT, M. I. "Levels of abstraction in vocabulary definitions of mentally retarded school children." *Am. J. Ment. Def.*, 63, 1958.
BALDWIN, R. "The social position of the educable mentally retarded child in the regular grades." *Exceptional Children*, 25: 3, 1958.
BALLARD, P. B. *Teaching and Testing English.* London: U.L.P., 1938.
BANGS, J. L. "A clinical analysis of the articulatory defects of the feeble-minded." *J. of Speech and Hearing Disorders*, No. 7, 1952.
*BEASLEY, J. *Slow to Talk.* Bureau of Publications, Teachers' College. New York: Columbia University.
*BELL, V. *On Learning the English Tongue.* London: Faber and Faber, 1953.
*BRUFORD, R. *Speech and Drama.* London: Methuen, 1948.
BURT, C. *The Backward Child.* London: U.L.P., 1937.
BURROUGHS, G. E. R. (ed.). *Study of the Vocabulary of Young Children.* Edinburgh: Oliver & Boyd, 1957.
*CHESHIRE EDUCATION COMMITTEE. *The Education of Dull Children.* London: U.L.P., 1956.
RAVEN, J. C. *Crichton Vocabulary Scales.* London: H. K. Lewis, 1951.
CLARKE, ANN and A.D.B. *Mental Deficiency—the changing outlook.* London: Methuen, 1958.
COLLMAN, R. D. and NEWLYN, D. "The leisure activities of subnormal and other ex-pupils in England." *Am. J. Ment. Def.*, Vol. 62, 1957.
*CUTFORTH, J. A. *English in the Primary School.* Oxford: Blackwell, 1952.
DAWE, H. O. "A study of the effect of an educational programme upon language development and retarded mental functions in young children." *J. Exp. Ed.*, Vol. II, 1942.
*DESCOEUDRES, A. *The Education of Mentally Defective Children.* London: Harrap, 1928.
DOLCH, E. W. "Vocabulary study by fields of interest." *Elem. Eng.*, 32.
DUNCAN, J. *The Education of the Ordinary Child.* London: Harrap, 1942.
HEBB, D. O. *The Organisation of Behaviour.* New York: Wiley, 1949.
HUMBER, H. M. "A study of conversation in the language development of junior ESN children." *Unpublished Dissertation, Dip. ESN, Univ. of Birmingham.*
JOHNSON, G. A. "A study of the social position of mentally handicapped children in the regular grades." *Ph.D. Thesis, University of Illinois*, 1950.
*KIRK, S. A. *Early Education of the Mentally Retarded.* Urbana: University of Illinois Press, 1959.
*KIRK, S. A. and JOHNSON, G. O. *Educating the Retarded Child.* London: Harrap, 1957.
*INGRAM, C. *Educating the Slow-Learning Child.* London: Harrap, 1953.
*ISAACS, S. *The Children We Teach.* London: U.L.P., 1932.
*LEWIS, M. M. *Language in School.* London: U.L.P., 1942.
*LEWIS, M. M. *The Use of Diagrams in the Teaching of English.* London: Ginn, 1936.
LURIA, A. R. *Speech and the Development of Mental Processes in the Child.* London: Staples, 1959.
LITTLE, M. F. and WILLIAMS, H. M. "An analytic scale of language achievement." *University of Iowa Studies in Child Welfare*, 13, 1936.
OLIVER, J. N. "Motivation of ESN boys through physical activities." *The Slow Learning Child*, Vol. 4, No. 1.
*MCALLISTER, A. H. *The Primary Teachers' Guide to Speech Training.* London: U.L.P., 1941.
*MCDONALD, J. L. "The teaching of language to older ESNs." *Special Schools Journal*, No. 47, 1958.

*Items marked thus constitute a bibliography of readily readable material.

*McKee, P. "Vocabulary Development." In 36*th Yearbook Nat. Soc. Study of Education*. Public Schools Pub. Co., 1937.
Papania, R. "A qualitative analysis of the vocabulary responses of institutionalised mentally defective children." *J. Clin. Psychol.*, No. 10, 1954.
Portwood, P. F. "Progress report on the Sheffield ESN study." *B.P.S. Bulletin*, No. 34, 1958.
Pringle, M. L. K. and Bossio, V. "A study of deprived children." *Vita Humana*, Vol. 1, No. 3/4, 1958.
Pringle, M. L. K. and Tanner, M. "The effects of early deprivation in speech development." *Language and Speech*, Vol. 1, Pt. 4, December 1958.
*Renfrew, C. E. "Speech Problems of Backward Children." *Speech Pathology and Therapy*, April 1959.
Richardson, J. E., *et al*. *Studies in the social psychology of adolescence*. London: Routledge and Kegan Paul, 1951.
*Schonell, F. J. *Backwardness in the Basic Subjects*. Edinburgh: Oliver and Boyd, 1942.
Sheridan, M. D. *The Child's Hearing for Speech*. London: Methuen, 1948.
*Smith, A. E. *English in the Modern School*. London: Methuen, 1954.
*Stapleton, M. "Experimenting with a tape recorder." *Special Schools Journal*, No. 46, 1957.
*Stapleton, M. and Renfrew, C. E. "Come and talk." *Special Education*, 1950.
Travis, L. E. *Handbook of Speech Pathology*. London: Peter Owen, 1959.
Tansley, A. E. "The use of mental and scholastic test data and case history information as indication for the treatment of ESN children." *M. Ed. Thesis, University of Leeds*, 1952.
*Tansley, A. E. and Gulliford, R. *The Education of Slow Learning Children*. London: Routledge and Kegan Paul, 1960.
*Taylor, E. A. *Experiments with a Backward Class*. London: Methuen, 1949.
*Watts, A. F. *Language and Mental Development of Children*. London: Harrap, 1944.

* Items marked thus constitute a bibliography of readily readable material

HIGHLY INTELLIGENT CHILDREN

PART I—THE PSYCHOLOGY OF THE GIFTED

W. D. WALL

Introduction

HOWEVER we interpret the term and where ever we draw the borderline, high intelligence is probably the most precious of a community's social and economic assets. From gifted individuals come the sources of creativity, of leadership and of progress on all levels—moral, ethical, artistic, scientific and political. On the other hand, apart altogether from the social and economic loss caused by the wastage of unused ability, the highly intelligent maladjusted or anti-social individual can be a greater threat to his fellows and to his society than his less able contemporaries.

Thus, all other considerations aside, the best all-round education and training of the most able group of children and adolescents is an essential aspect of the conservation and exploitation of our natural resources. To some extent, the Education Act of 1944 recognised this, crowning nearly half a century of attempts to give able children the right to a fitting education in school and later in University irrespective of their social background. It is probably true to say that, in this country, administrative action has gone further than in almost any other to open the doors of educational opportunity to all children and, with the promised increase in University places, it may be that all the most able young men and women in our community will eventually have the chance of continued study well on into their twenties. It is appropriate, therefore, that we should ask a number of questions concerning the identification of high ability, the kind of education that we provide for able children, and whether, in fact, we are developing natural talents to the full in the best possible way. Not all the questions which we might pose under these headings can be answered by objective research and studies ; many of them involve decisions of a social and ethical kind. What we can do, however, is to examine the knowledge we already have as a basis for reviewing that part of our educational system and methods which deal with the pool of high ability.

Some distinctions and definitions

Terman's famous series of studies of children of very high ability is entitled " Genetic Studies of Genius." He took as his borderline for the inclusion of children in his sample an intelligence quotient of 140, which on his test would include between 0.5 and 1 per cent. of an age group. However, it is evident—as Terman himself points out—that the common connotation of genius implies something more than high intelligence, though probably genius cannot exist without it. Special talents are, in rare cases, found to a marked degree independently of high general ability, but they do not as a rule result in genius. Genius in any field, in fact, implies a combination of high general ability and in some cases special talent, with qualities of personality and character and probably

also a fortunate conjunction of circumstances. As defined by achievement, the number of geniuses, and indeed of men and women of eminence, in any generation is very much less than the number of those who have outstanding ability and talent, even combined with a reasonably satisfactory and stable personality.

Hollingworth, whose work is complementary to that of Terman, used the term " potential genius " and applied it to that very small proportion of children whose intelligence quotients reached or exceeded 180. Even here, however, although, in common with Terman's sample, many of the children she studied produced in their childhood and adolescence creative work of the kind which frequently marks the early years of the great, and many of both samples occupy posts of distinction in the arts and sciences, few indeed have since become recognised as " geniuses," in the full sense of the word.

Genius in its fullest sense is, of course, of immense importance to any society; as, however, it is very rare, and in any case we know so little about the conditions which produce it, our main attention must be devoted to the general pool of high intellectual ability from which will be recruited our scientists, teachers, leaders in political and business life and indeed the professions generally. We tend at present in our English educational system to assume that this pool is defined by the ability to profit from a grammar school type of curriculum in adolescence. Roughly, this means, with current selection ratios, that we set the borderline at about I.Q. 110-115; in general, our University courses and courses of equivalent status seem to pre-suppose a borderline of around I.Q. 120-125. Thus, by implication, our educational system defines high ability in terms of borderlines which include somewhere between five and twenty-five per cent. of the population, according to the stage at which we make our choice.

Wastage—Do we locate all able children

This does not mean that the best twenty-five or five per cent. necessarily all find their way to grammar school or university. It does, however, probably mean that few of the outstandingly able children now fail to qualify for entry to grammar school. Wastage seems to be greater, however, among those who, while not perhaps supremely brilliant, nevertheless have the ability required for University studies and subsequently for a professional career at a high level, but who either do not enter grammar schools, and take academic courses or who abandon their studies at or shortly after the end of the compulsory schooling period. Recent figures provided by a number of L.E.A.s* (nineteen County Councils and thirty-one County Boroughs) seem to suggest that whereas in all some thirty-six per cent. of an age group follow a grammar school type of course, and some fifteen to twenty-five per cent. are in grammar schools as the result of the eleven-plus allocation procedures, little more than five per cent. of the age group succeed at the end of a five-year course in taking successfully five important subjects (English language, a foreign language, a science or mathematics and two other subjects) at G.C.E. " O " level. Somewhat less than five per cent. go further and successfully qualify in two or more advanced level subjects after seven years.

*I am indebted to Mr. W. R. Smedley, Chief Education Officer, Bournemouth for this information

Our present allocation procedures, however, although generally more efficient than any other form of examination or spot guidance, can take no account of a number of factors which determine potential performance. Virtually—in spite of the possibility of transfer at thirteen—a child's education during adolescence and consequently his chances of higher education are determined, in this country, by the result of five years in the primary school. It is true that increasingly over the past fifteen years our system has provided possibilities—through evening classes, academic courses in secondary modern schools, special late entry examinations at the University, University extension courses and a multiplicity of similar opportunities—for the youth whose abilities are late in declaring themselves or who suffered from a social disability in childhood, to re-enter higher education or to make up for lost time and opportunity. Re-entry, however, is difficult, intellectually, and in spite of economic aid, financially. It seems likely that only a few of those who might profit, do in fact succeed in doing so.

However, ability as shown in school learning and subsequently by vocational success, social contribution or whatever other criterion be chosen, is only in part determined by strictly genetic factors. " Operational intelligence " as we are coming to call it, is a product of inate ability and the educational effects of the environment: just as the limits of physical height are determined by the genes but the height attained is a product of the accidents of nurture and a sufficiency of the right kinds of food and exercise, so the ability which we see and attempt to measure in children and adolescents is the sum of inheritance motivation and nurture. We know, from the work of Spitz, Bowlby, Roudinescu, and many others that marked lack of affectionate mothering will result in a lowering of ability and that emotional deprivation in infancy particularly affects the development of verbal concepts and abilities. Moreover, if this continues beyond a certain point, its effects are irreversible. From the work of the Population Investigation Committee which is following the growth of some 5,000 children born in 1946, it seems to be indicated that the quality and level of parents' interest in their children markedly affects not merely academic attainment but the complex general ability we measure by intelligence tests. It is reasonable equally to suppose that the quality of the formal education given within the primary school, the relationships of pupils in their early school years to their teachers, the nature of the stimulation—intellectual and emotional—which they receive at school will also be at least a marginal factor in the growth of ability. We may thus surmise that there is a proportion of children—of a size unknown but not negligible—whose talents never show themselves to the full because the environment starves them in important ways.

This is not to say that very high ability is likely to be completely smothered, even by severely adverse circumstances in childhood. The early lives of many geniuses, for example Bunyan, Faraday, Dickens, D'Alambert—show the contrary. What does seem to be true, in this as in many fields of human growth, is that very high general ability can triumph over a severity of adverse circumstances that would overwhelm the less able; and of this, Helen Keller, born deaf and blind, is a supreme example. Before, however, working in the L.C.C., Burt found that, of children tested in primary schools and who had a level of general ability suiting them for a University career, some forty per cent. failed to reach a University. Floud and her co-workers have found that, since the 1944

Act, the position has improved, but they remain convinced that a considerable proportion of gifted children fail to secure the education they deserve.

On the other hand, general ability and talent well above the average may never declare themseives if nurture is lacking, or if emotional deprivation is marked; in other cases, ability may grow but be sterile because of emotional blocks to achievement or become anti-social and destructive in its effects because the environment has shaped it that way. All of us are aware of adults, often by virtue of their intelligence and education, in positions of considerable responsibility, whose influence, because of their experiences at home and in school, is either egocentric or destructive and inhibiting in the lives of others with whom they work every day.

Importance of Healthy Personality Development

Thus, it is difficult to over-estimate the importance of a constructive education, at home and in school, for able children if they are to realise their intellectual capabilities to the full. However, socially and personally something more than a merely reasonable state of emotional equilibrium is necessary. The kind of democracy which we favour, though it recognises as ethically basic to the system, the fact that all human beings are equal in rights and in value, recognises also the inequality of ability and therefore of function. Leadership—though not necessarily authority or overt power—comes from the most able. Hence, it is of fundamental importance that highly intelligent children and adolescents should see their high endowment, not as a source of egocentric and purely personal advancement, but as a trust which in fact increases their responsibilities towards others. It seems important, too, that such youths should gain an insight into the sources of prejudice, that they should become aware of factors which distort their own thinking and that of others and that they should learn positive attitudes of a creative kind rather than developing—as so many do—a cynical criticism and a somewhat negative outlook. To all this we must add a driving interest, a temperamental stability, and above all, a capacity for sustained dogged hard work without which intelligence and other qualities are likely to be of little avail.

We may ask whether the present stress on inter-personal competition which marks some facets of our educational system is fully desirable; and whether, in fact, we make sufficient demands and of the right kind upon our ablest ten per cent. of pupils.

The Mental and Physical Health of Able Children

The romantic notion is still largely current that genius is maladjusted emotionally, often feeble physically, and that poets, in particular, tend to die young. Similarly, the popular picture of the highly intelligent child presents him as puny, and bespectacled, as precocious in language interests as he is retarded in his emotional development, liable to over-fatigue, difficult to get on with, and so on.

So far as we know from systematic studies, there is little truth in these stereotypes. Some poets and artists have died remarkably young; but many more have lived well beyond the expectation of life of their generation. Many with more than a spark of genius have had grave defects of character which have led to disturbed private lives, to

wild excesses and to considerable and sometimes fatal social difficulties. Many more, however—though their originality and intelligence have perhaps shown themselves in private and public lives that depart from the commonplace—have been fundamentally effective, well-organized human beings with their share of adversity and of happiness. Indeed, many of the truly towering and universal geniuses like Shakespeare, de Vinci, Horace, Rabelais, Moliere, Cervantes, Rembrandt, seem to have lived hugely and with gusto, experiencing no greater outward occasions of tragedy and misfortune than others of their period and achieving in old age a complex serenity. The same would seem to be true if we accept as a definition of genius or emminence, an entry in the Dictionary of National Biography.

Terman and his co-workers studied between 1921 and 1925 the mental and physical traits of 857 boys and 671 girls with Stanford-Binet I.Q.'s of 140 or more discovered in the schools of California. Very full case-histories were made of these children—including a thorough physical and mental examination, tests of achievement, of interests, and character, home ratings and so on—and the group was compared with a random sample of ordinary children from the same schools. They found, as one might expect, in the gifted group as in the normal, a considerable range of inter-individual differences and consequently considerable overlap in many respects between the two groups. However, gifted children proved to be, on the whole, taller, heavier, physically healthier and somewhat more advanced than the average in their general physical maturity. In terms of character and personality development, the general superiority was even more striking; the typically gifted nine-year-old child tended on a variety of tests and ratings to test as high as the average twelve-thirteen-year-old. On ratings by parents and teachers, over eighty per cent. of the gifted exceeded the mean on volitional traits, nearly seventy per cent. exceeded the mean on emotional traits and nearly sixty per cent. on social traits. They were less inclined to boast, were more trustworthy when tempted to cheat, their character preferences and social attitudes were more wholesome, and their emotional stability greater. Most striking of all, as one would expect, is the superiority of the gifted group in the whole intellectual field. In formal attainments, such children are some forty per cent. accelerated compared with their normal age mates, their advance being most marked in reading, language usage, arithmetic reasoning and least, but still striking, in spelling computation and factual information about conventional school subjects—though even here they were well above average. In their intellectual and play interests out of school, ninety per cent. of Terman's gifted nine-year-olds exceeded the mean and on the average were considerably more than two years in advance of their contemporaries.

It is clear from Terman's enquiry that the able child tends to be superior to the average in every way: there is no law of compensation which offsets high intelligence by inferiorities in non-intellectual fields. However, the degree of superiority to the average is not the same in all fields and is greatest in those most closely related to what we understand by intelligence—originality, intellectual interests, achievement test results. Moreover, when the gifted group is looked at as a collection of individuals, then one sees the same infinite variety of patterns as in any other group, and examples can be found of personality defect, social maladjustment, behaviour problems and physical handicaps of

various kinds. The difference lies mainly in that among the gifted the incidences of such patterns are less than in the general population.

Terman and his co-workers followed up this gifted group in 1923, 1924 and 1925, in 1927-28, in 1936-7; and again in 1945. At the time of the last survey, the mean age was 35 years, though, of course, some were considerably older and others younger. By and large, the general promise of the earlier years was fulfilled and the gifted group in adulthood was markedly superior to the general population in ability, personality and general social performance. Both sexes exceeded in mean height not only the general norms for the population but those for university graduates, the death rate was only four-fifths that of the general population. The delinquency, divorce, maladjustment and insanity rates were lower than average. Of the gifted group, proportionately eight times as many entered College (ninety per cent. men, eighty-six per cent. women) as from the population as a whole, and they tended to graduate one year sooner than average. Over half the men and nearly one-third of the women took postgraduate degrees. Over eighty per cent. of the men in 1945 were in the two highest professional groups and during the depression of the 1930's, whereas some fifteen-twenty per cent. of males were unemployed, only one per cent. of the gifted were.

By no means all these able youths became what we would call geniuses, or even eminent men and women. However, by 1945, the group had produced ninety books, fifteen hundred articles, more than 100 patents; twenty-one were listed in *American Men of Science* and seven in *Who's Who in America.*

One of the most interesting parts of the follow-up survey was Terman's study of 150 of the most and 150 of the least successful. On all the early ratings (1922) except physical health, the unsuccessful were lower, and there were even larger differences in 1928, the general mental health of the successful becoming by 1940 increasingly and markedly superior. Fewer of the unsuccessful group married and among those who did, the divorce rate was more than twice as high; they had less job stability, more drift and more frequent unemployment. Self ratings, ratings by wives and by parents showed the successful group to be higher in perseverance, self-confidence, integration towards goals, and absence of inferiority feelings.

It is of interest to note, too, that in terms of educational attainment the successful and unsuccessful were more or less equal in primary school, but at the High School stage they began to draw apart and at the College level the discrepancy was striking.

It is arguable perhaps that some of the superiority of the successful group was itself a product of success and had a cumulative effect; but it is significant that at the earliest stage of the enquiry when the majority of the subjects were aged nine or less, striking differences were apparent between the two groups and that they were of a kind and direction which subsequently seem to have intensified. Terman's study reinforces the importance given to the early detection of maladjustment and to positive attempts at ensuring a fully balanced personality in children. Terman sums the matter up himself by saying " Contrary to the theory that great achievement is usually associated with

emotional tensions which border on the abnormal, in our gifted group, superior success is associated with stability rather than instability, with absence rather than presence of disturbing conflicts—in short, with well-balanced temperament and freedom from excessive frustrations."

Children of high ability who are not detected

It is at least arguable, however, that the very severely disturbed and maladjusted did not enter into Terman's research, because their maladjustment was such that it affected the test-performance by which they were selected. Moreover, our greater awareness of the effects of environment—and particularly of the influence of the specifically educational content of the pre- and early school environment—might lead us to ask whether some highly able children failed to be selected because of the inhibitive effects of social deprivation. These two lines of thought of course reinforce Terman's main thesis as stated above and draw attention to the need for even earlier detection of high ability than he was able to undertake—especially if we wish to remedy the effects of maladjustment and early deprivation and thereby effectively increase the pool of high ability.

It is unlikely, though not of course impossible, that children whose ability was actually high enough to enter Terman's sample but who did not do so because of environmental causes lowering their operational intellectual efficiency, subsequently realised their potentialities without any special help. It is possible, too, that some children do not grow intellectually and educationally quite like the generality. Olson, who has studied considerable samples of children over lengthy periods in an environment where they could develop more or less in their own way and without the constraints and the need to conform which characterise most systems, suggests that there are some children whose growth is far from linear Such children have a pattern of their own, they may develop intellectually and educationally very fast for a period and then, for no apparent external reason, stand still for months or even years before moving forward again. In general, as Terman found, early intellectual status predicts subsequent standing and though the actual I.Q. may vary considerably between, say, nine and nineteen, adolescents tend to occupy the same position relative to their total group as they did when children.

A similar finding comes from English work. Dr. Morris investigating reading attainment in the schools of Kent found that those who were outstandingly good readers at the age of eight remained outstandingly good at eleven and were those who qualified for entry to Grammar School courses. Thus, detection of high ability is, in most cases, possible in the first junior school year—and probably much earlier than this. But exceptions—and quite marked ones—do occur. To explain them we must invoke changes in the emotional and social factors which condition the operation of intelligence; and irregular but probably hereditary and biologically determined patterns of growth. Only by continuous sensitive observation are we likely to detect and wisely to educate such children, many of whom now probably are overlooked.

The difficulties of very high ability

So far we have been speaking in the main of children who fall in the top one or so per cent. of the population. Hollingworth, working in the same period as Terman but

in a different part of America, made a special study of a very small number of children with outstandingly high ability—an I.Q. of 180 or higher—and who occur only at the rate of one or two per million. She came to one very important general conclusion. Children such as those in Terman's group and the many more just below his borderline—i.e., those who fall in the band of superior ability between, say, I.Q. 125-150—are the best placed. Success in school comes relatively easy to them; they have the ability for acceptable leadership, efficient self-management and adjustment. At the same time, there are sufficient of them in number to afford equality of companionship, mutual self-esteem and understanding.

Above I.Q. 170, and still more higher than this, children have very considerable difficulties, especially in social adjustment and adaptation to school life, especially in a school which insists on keeping children more or less in step with each other. Such very intelligent children find companions of their own age or even a bit older hard to come by; their language, their interests, the sheer play of their reasoning are so far beyond those of their contemporaries. Among other children, even those well above average in ability, they tend to be unpopular because they always " want to organize the play into complicated patterns with some remote and definite climax as the goal."

Intelligent children, and particularly the highly intelligent, tend to have interests well in advance of their physical age. Precociously concerned with such things as matters or origin, destiny and evil in the abstract, immature in experience but mature in logic, they rouse the anxiety, antagonism and jealousy of adults. They easily become negatively suggestible and the illogical conduct of adults may lead to rebellion or to a gathering cynicism.

The root of these difficulties—as with so many difficulties with other kinds of children —lies in the discrepancies which exist within the child himself and between him and the demands and expectations of the environment. Terman studied those children in his sample whose I.Q. exceeded 170. He found, for example, that while mental age at six might be eleven, physical development would be accelerated only by ten per cent., and social development by between twenty and thirty per cent. Few of these children were rated by parents and teachers as sociable or well adjusted and of Terman's sample, thirty-four per cent.—more than twice the proportion of his main gifted group—were considered to be more or less seriously maladjusted or almost completely withdrawn from social intercourse. Similarly, while creativity and originality are a mark of high ability, between one-third and a quarter, both of Terman's and of Hollingworth's groups, were only fair or even poor in their general educational achievements.

New York University's Counselling Centre made a follow-up study of rather more than 100 children, who at the time of testing were about five and had I.Q.'s of 170 or more. The conclusions of their study are that in the pre- and early school years such children function with no more stress than young children in general but even in the nursery school they have some difficulty in finding companions.

The picture, however, changes markedly in the primary school years and in adolescence many succeed for a long time in maintaining a high level of intellectual functioning;

but loneliness, lack of companionship and of understanding mean that this is achieved at increasing emotional cost. Some show diminution of social interest, creativity and productivity; a few are remarkable only for consistently high intelligence test scores.

According to this study, such children tend to come from middle and upper middle class families where the mother is herself intelligent and cultivated and tends to reject her feminine role, thus complicating her relationship with her child. She may reject the child openly; more usually such rejection is unconscious and the guilt and anxiety it provokes leads to over-protection and too great an identification with the child.

To this, some children react with an increasing compulsion to succeed and a diminishing satisfaction with success; others with self-doubt; others with an anxiety which prevents them from risking failure and tends to inhibit the fulfilment of their ability. Typically, such children work well below their capacity; their interest flags, they become restive: often they are frustrated and resentful. On the other hand, they may become the object of parental pressure and exploitation—even exploitation for commercial gain—with an over-emphasis on intellectual development at the expense of almost every other aspect of personal growth.

Some of the problems of these children and of those who, still outstanding, are not so highly gifted, arise from deeply-rooted attitudes in our society, stereotypes of what is and is not acceptable from children and adolescents, fears of high intelligence and its power of penetrating shams and defences. Intellectually, a very able child of ten may well be superior to his parents, to most adults whom he meets and to his teachers. Experientially, however, he cannot be as knowledgeable and many things are decided in the light of accumulated experience rather than that of logical thought. The intellectual superiority of the able child and adolescent thus constitutes a continual threat. From a very early age he or she asks penetrating and awkward questions, remembers in detail facts and incidents, broods over inconsistencies in words and deeds, in opinions and perceives expediencies without himself having the ballast of experience or the blunted sensibilities that often go with it. The mind of an adult in the emotional life of a pre-adolescent with only a child's experience to illuminate it can be threatening, even frightening to adults, especially if they feel responsible for the child's education, and see the authority which they base on age, experience and maturity undermined by intellectual thrusts beyond their power to parry.

Small wonder, then, that Hollingworth found an emotional bias against the highly gifted among teachers or that many adults react to such children by trying to take them down a peg or two, by refusing to answer their more searching questions, especially those concerning the deeper human relationships and sexual matters, by a covert or overt hostility disguised as a discouragement of precocity.

However, two things seem probably important in interpreting American evidence on this matter in the light of conditions in this country, or indeed, in Europe generally. The first of these is the somewhat different social structures of the countries concerned and the different emphasis placed upon ability. Fundamentally, of course, the Americans accept individual differences and, indeed, much of the research work demonstrating these differences is of American origin. However, there is a strong emphasis on equality and

a perhaps greater tendency than here to reject any form of behaviour markedly deviating from the average or normal. Moreover, since highly intelligent children tend proportionately to come more frequently from economically and culturally superior homes, and since in England there is a highly developed system of private schools, usually within residential areas of a relatively homogeneous social composition, individual outstandingly able children are likely to be less lonely and less likely to be regarded as " odd " and " peculiar " than the U.S. In a culture like the French, which places very great emphasis on verbal skills and intellectual precocity, difficulties of the kind mentioned in American research are even less likely to arise—though, of course, others may and do.

The second important factor is the nature of the educational systems themselves. It will be recalled that the researches of Terman and Hollingworth are agreed that very able children, although in most cases in advance educationally of their age-mates, nevertheless, do not always fully achieve the level which their abilities would warrant. At the time these researches were undertaken, most American primary schools had an age-grade system and children were promoted from year to year if they had mastered a prescribed syllabus. Bright children tended to be accelerated (and dull ones retarded) by a year or two; but rarely was a child accelerated by more than two or three years. As Olson points out, this kind of lock step system is less rigid now than it was. It of course continues in its full rigour in most Latin countries. Here it ceased between the two wars and streaming and age promotion may in fact make it possible to cater for children of outstanding ability in a way impossible in age-grade systems.

Another feature of European systems is also worthy of note. In general, the American system is not selective in adolescence, though, within the Junior and Senior High Schools (rather similar to our Comprehensive Schools) pupils have a wide range of choice of course. Our system, in common with many of those of Europe, tends to be heavily selective, certainly from the age of eleven, and increasingly so thereafter. Not only is there the broad allocation between modern and grammar schools, but within the grammar school field, some individual schools expect to get only pupils of a very high level of academic ability. Within such schools also, certainly from the age of thirteen and progressively through the next three to five years, there is streaming in terms of ability, choice of subject and courses and a considerable variation possible in the number of subjects prepared for public examinations.

Those who have studied the growth of very able children have remarked that their difficulties of a social and educational kind are most likely to be marked within the middle years—virtually what we think of as the junior school period—and that they lessen as age increases the range of social movement, allowing them to seek companions of their own kind and as mastery of educational skills allows them to seek and find the intellectual challenge they need. Our system of progressive selection by academic attainment, though it has many defects, makes it more likely that the able child, even in the primary school, and certainly at the secondary and subsequent stages will meet his equal and find stimulation. This, of course, does not mean that we have solved the problem of how the most able one, five or ten per cent. of children should be educated. This is a matter which is occupying the attention of educators in America as well as in this country and Europe. It will form the subject of Part II of the present paper.

A New Publication:

Vocabulary of the Secondary Modern School Child

An Empirical Study of the Words Known by Senior Pupils in Secondary Modern Schools

D. G. Burns, M.A., Ph.D.,

University of Leeds

N.F.E.R. Occasional Publication No. 1

Now available at more than twice the size originally planned, this publication reports an inquiry undertaken to obtain information about the words understood by children in Secondary Modern schools. The results are recorded in the word list contained in this study.

This series is intended to make available to research workers and others, specialised matter arising from research work undertaken in this country by the N.F.E.R. itself, by individual research workers, by officers attached to L.E.A.s or by the research departments of Universities. Material which would normally find its place in one or other of the learned journals will not be published, nor will matter which could be expected to achieve publication in book form. The series is intended to provide an outlet for work of a high level but with a limited readership and which would otherwise become rapidly inaccessible.

Obtainable direct from the National Foundation for Educational Research, 79, Wimpole Street, London, W.1. 175 *pp., price* 8/6*d., post-free.*

PROBLEMS IN MODERN LANGUAGE TEACHING

DAVID WILSON BELL

IN this first article on modern language teaching, discussion will be confined mainly to the general problems which are encountered, and it will be convenient to look critically first of all at the existing state of affairs. We may then proceed from a clarification of these problems to a consideration of such objective and practically useful evidence as we have which bears on the teaching of modern languages.

The Scope of Modern Language Teaching

It is apparent that " modern languages " is not one subject, but many, potentially at least. This matter of the scope of the curriculum subject under the heading of modern languages is particularly important, since it raises questions concerning the application of experimental results obtained when working with any particular language or group of languages to the teaching of others, especially those of widely differing structure. The number of modern foreign languages at present taught generally throughout England and Wales is only about half a dozen, of which French is easily the most common, followed by German, Spanish and Italian and certain other European languages in some places.[1] These languages are, however, representative at least of two major language groups, Germanic and Romance, which differ widely in their general structure and, more particularly, in their speech patterns. With the expansion of language teaching in establishments of Further Education, the actual number of languages taught and the number of major linguistic groups involved have already been enlarged and are likely to continue to be so, particularly with regard to the Slav group. Thus, though the general linguistic background remains Indo-European, the structural variety introduced in the various languages and language groups, renders the utmost caution necessary in interpreting the general applicability of any research results.

Research into language teaching of any kind is comparatively scanty, especially when we compare it with the effort so far devoted to the basic subjects of the school curriculum—such as Reading and Arithmetic—since the end of the second world war. By far the largest part of available research into modern language teaching has been carried out in the United States, and of the rest, much is devoted to the teaching of English as a foreign language. At present, therefore, our best guidance for the teaching of modern languages is likely to come from applying general learning theory and what we know of child development and maturation to the problems confronting us.

Modern languages have, with other subjects of the curriculum, a high degree of complexity from which it is difficult realistically to partial out separate aspects of study. Teachers frequently complain that educational research is too esoteric and limited in that

[1] An analysis of modern language teaching statistics is contained in " Modern Languages," H.M.S.O. pam. 29 (Min. of Ed.), 1956.

it does not provide them with readily applicable and foolproof " methods." On elaboration, this objection is frequently qualified by criticisms of the irrelevance of detailed attention to some one particular and narrow aspect at the expense of a coherent broad approach to their classroom problems. However, objective assessment and, if possible, accurate measurement of attainments in this or indeed any other subject is basic to the solution of most problems—for example, that of comparing the effectiveness of different methods of teaching. Such comparative assessments or measures are of most use when expressed in the same terms and when they measure the same thing quite unambiguously and reliably.

Thus, attempts at measurement are a first step and it is not surprising that the most reliable and hence the most useful individual researches in modern language teaching have tended up to now to deal with the comparatively narrow aspect of measurement and possibly with some limited teaching problem in depth, rather than a global attack on all the problems of method at once. It would be of great service to modern language teaching if more members of the profession would undertake thorough objective investigation within limited spheres of their teaching activity. The attempt to tackle the basic problem of measurement as the prelude to more global studies is likely itself to be a lengthy process, but it is something teachers could contribute to and would be of service to the advance of modern language teaching.

However, before we can measure how far aims have been attained, we must clearly define them, preferably in operational terms which can be tested experimentally rather than as vaguely phrased or philosophic ones. Unfortunately, in many reports from official and semi-official sources and also in the prescribed syllabus of some examination Boards there is a dearth of precise definition. For example, one finds justification of the following kind for the inclusion of modern languages in the curriculum:

> " As a discipline, most languages can offer valuable scope for the exercise of the powers of observation, comparison, analogy, accuracy and concentration, as well as for auditory, oral, visual and mental training."

This appears to postulate notions of " mental discipline," of " faculties " and of the transfer of training. A considerable amount of experimental work has already been done in this field, with the result that earlier ideas concerning transfer of training have either been abandoned or very much modified. We have learnt from the experiments which have been already carried out that a subject should be taught for its intrinsic value rather than for any supposed disciplinary value, that transfer of the effects of training is likely to take place only if the teacher deliberately plans for such transfer in his method by consciously drawing the attention of the pupil to the nature of the operation performed in a given learning situation. Habits formed in one sphere may, in fact, inhibit the growth of apparently similar habits in others.[1] Valentine admirably summed up the danger of including some generally applicable and beneficial transfer effect amongst the aims of modern language teaching by pointing out that if, as enquiries showed:

[1] An objective criticism of theories of mental discipline and transfer of training appear in a series of papers by Hamley and others in the *British Journal of Educational Psychology*, before the war.

> " there are limitations in the possibility of a general training of reasoning through science or mathematics, there are even greater limitations to the possibilities of a general training through the study of foreign languages."

Modern language teaching in schools is likely to be most successfully approached if it is justified in terms of its intrinsic value and its aim defined as that of efficiently teaching the language by the best available means. Such a practical view of modern language teaching as a whole is, in fact, embodied in the same report as was cited earlier:

> " The pupil must learn as well as possible to understand, speak, read and write the language; and, at suitable stages in his progress, he must learn what he can of the history, society and culture of the people who use it."

This, so far as it goes, is unexceptionable. What is now necessary is to *define* levels of spoken accuracy and fluency, of reading skill and of ability to write in a foreign language; and to determine what constitutes a reasonable entry into its history and culture.

Of course, when aims are stated in precise terms, as distinct from comfortable generalities—as, for example, that mastery of the spoken language is shown when the pupil can answer the telephone and make himself understood by native speakers—differences and controversies arise concerning the relevance of the items chosen and the values of those omitted. Without some precision, however, there can be no measurement, even of an elementary kind. Until such a procedure is adopted, all assessment will be subjective impression, and until objective measurement is attempted no one can tell whether a given measure—whether test, public examination or teacher's estimate—is or is not fair to pupil and teacher, or whether it is predictive of the way in which the skills acquired can be used in real situations.

Achievement Testing in Modern Languages

Thus, even before method is considered, aims require definition, and this must be done as far as possible in empirically measurable terms. To some extent, this has been done implicitly rather than explicitly in various public examinations, and the tendency has been for those who construct tests to use success in such public examinations as their criterion. Even the *ad hoc* teacher-constructed tests seem, not unnaturally, to have this objective in mind. It will be noted that this is tantamount to saying, if more precisely defined, that the aim of teaching is to get pupils through a prescribed examination, an aim which has frequently been depreciated by official enquiries.

The testing arranged and carried out by the language teacher gives him a rough but usable measure of his pupils' progress in terms of the work he has set them. There are however, dangers that erroneous conclusions may be drawn if too much is claimed for the results of such testing. Regular testing, including class exercises, helps the teacher to diagnose the difficulty experienced by the individual pupil. Dangers arise when comparisons in performance are made between individuals or groups of pupils. It is here that the great need arises for standardized tests of attainment in which the difficulty-grading of the items has been carefully analysed and related to a detailed agreed syllabus.[1] A considerable amount of work has been done in this field in the United States, though

[1]Recent examples are the Standardised French Grammar and Vocabulary Tests prepared by T. S. Percival in co-operation with the University of Durham Department of Education and published in 1951 by the University of London Press.

English norms are not at present available for most of these tests, nor is the test universe necessarily acceptable for curricula in use in this country. Most of the recent work which has been undertaken in Great Britain has so far been largely experimental and is not generally available. Some of this work will be discussed in more detail in a later article, but there is ample scope for work in this field.

Standardised attainment tests in modern languages have been constructed to cover vocabulary and grammatical aspects of language teaching separately, as in the *Percival Tests* referred to above and in the *Active French Tests* by Morris and Emerson. Other tests, such as the *Iowa Placement Examination Series*, contain vocabulary, grammar and comprehension sub-tests in the same form. The form of the questions is generally sentence completion or a multiple choice answer, designed to minimize the effects of guesswork. It is interesting to note that comprehension passages of the type set in public examinations can and do form part of the standardised attainment test in modern languages, contrary to the view sometimes expressed that such tests cannot be used to evaluate the more complex linguistic operations. Tests of aural attainment, such as the *Co-operative French Listening Comprehension Test*, can be applied in a similar way to test the pupils' understanding of the spoken word. Tests of this sort generally make use of tape recordings to standardize speech, and the pupils record their answers in specially printed booklets, generally with multiple choice answers printed in them. The aural test shows that active teaching methods can be subjected to the same rigorous appraisal as more formal methods, and this can remove doubts as to the efficacy of teaching by these methods. Usually, tests of this sort cover a whole course in the specified language. The teacher's manuals generally contain norms for given age groups or grades in the course, together with advice on the establishing of local norms.

The preparation of standardized tests of attainment in modern languages presents few technical difficulties to qualified persons, though considerable time, effort and resources are involved. A major problem arises, however, when such tests are designed for use in our school system, or indeed for any system which has a prescribed general syllabus. Though curricula are not prescribed in this country except in general terms, the backwash effect of public examinations is generally acknowledged to have the same effect as an imposed curriculum. The pupil's progress in modern languages thus tends to be measured by the teacher in terms of what his subjective experience leads him to estimate as the pupil's progress towards success in these examinations. This is understandable since the success of both pupil and teacher are popularly judged by this criterion. For practical reasons, therefore, standardized tests of attainment should be related to the requirements of the public examinations which tend to determine the curriculum. This is in no sense a comment on the adequacy of such examinations, either in prescribing the scope of a subject or testing what has been attained by examinees, nor is it suggested that standardized tests of attainment in modern languages are only of use to the teacher when such a relationship with the public examination has been established, since a properly constructed test is always a reliable measure of the pupil's progress in the field which it is known to cover. To relate attainment tests closely to the examination syllabus which determines the curriculum would, however, mean that the reliable attainment test would also be, to the same extent, a reliable predictor of potential success in the public examina-

tion. It would thus have a considerable value in educational guidance in common with attainment tests in other subjects, especially if other objective assessment were not available to the teacher. One major drawback to this procedure is the type of public examination syllabus which requires a " competent " or " high " standard in language papers, or refers inquiring teachers, and perhaps even its examiners—to earlier examination papers. These are then merely assumed to be adequately representative of a hypothetical test item universe. The fact that an examination board expects a certain distribution of scores from its candidates and fixes its pass level accordingly is of little consolation to teachers unless they are assured that each examination paper is a representative test of what their pupils are required to know. There should also be some attempt to grade material in an ascending order of difficulty, since a time limit is in operation in these examinations. The significance of this argument is readily seen by comparing the variety of prose and translation passages set for a given level in an examination over a period of years. The solution of this difficulty lies beyond the scope of the teacher as an individual, but he can tackle it as a member of a professional pressure group.

A cursory glance at the modern language section of most good libraries will, of course, reveal a selection of manuals on teaching method in modern languages. Most of these are, however, to be distinguished from an objective appraisal of method by standardized comparison of achievement resulting from different teaching operations in that they are anecdotal or systematic. They contain the accumulated personal teaching experience of their authors or their colleagues, and, as such, are to be valued as guides to the teaching of modern languages, particularly as revealing useful hypotheses to be tested. They are, however, to be carefully distinguished from experimentally established findings, in that the appraisal of such methods is admittedly subjective and subject to an unknown degree of variation on this account and because of the absence of standardized procedure in assessing the conclusions concerning the methods used. Such methods also tend to proceed, though often unconsciously, from *a priori* assumptions concerning the learning situation.

A further consideration which appears to be quite important in reviewing the general methods employed by the modern language teacher is the historical approach. In advocating the study of living languages, the schoolteachers of the Renaissance period tended under Humanistic influence, somewhat naturally, to adopt the analytical approach then characteristic of the teaching of classical languages, which later became generally known as the " formal method." In as far as this method received any theoretical treatment, it was supported as a mental discipline largely on the basis of the old faculty psychology. It is apparent, however, that the same arguments apply to the validity of this formal method of teaching modern languages as were discussed in connection with mental discipline as an aim of teaching languages. In addition, it is noteworthy that there is here a complete lack of recognition of the process of mental development in the child and particularly of the importance of motivation to learning. If indeed, as it seems, this method does not lead to effective utilisation of the foreign languages, then it must be called thoroughly to question once its effect as a general mental training is denied. Indeed, it might seem unnecessary to consider the formal method further, except to stress the danger of relapsing into it whenever more active ways are tried and

reveal, as they do, that children's learning under any method is not continuous and simply cumulative. We know that there are plateaux and inhibitive conditions which arise and block progress for a time. The danger here is that the teacher may revert to formal instruction which, by its outward form, gives a semblance of inward learning. It will be recalled that the exponents of the Direct Method revolted against the formal tradition by attempting to teach the foreign language and its pronunciation through the medium of that language itself. This approach has been found to be successful where the teacher-pupil ratio is small and where the level in both teaching and learning ability is above the average. In less favourable circumstances the method has often failed, though it has been successfully used in economically highly motivated and intensive language courses outside the scope of the school system[1]. The failure of the Direct Method in the classroom situation has led by a sort of Hegelian synthesis with the Formal Method to the Oral Method of teaching modern languages. This is generally held to incorporate the best features of both the earlier systems. Whether this is in fact so does not appear to have been objectively tested and indeed would be difficult to test unless the methods themselves were clearly defined and then were made explicit. As general systematic methods they can perhaps only be assessed in the sense that the individual operations comprising them can be broken down into operational terms for further assessment.

To expand further the historical development of modern language teaching would be beyond the scope of this article. Its relevance to an objective appraisal of modern language teaching lies, however, in revealing the predominantly systematic and *a priori* nature of current methods of teaching modern languages in schools. It is only in the light of an awareness of the need for objective research that we can move towards finding scientifically established methods of teaching modern languages. This point is clearly brought out in the historical review of modern language teaching in England, throwing light on the development of method, contained in the comprehensive study by Mark Gilbert.[2]

Readiness to Learn

Despite the freedom from centrally prescribed curricula enjoyed in this country, there still seems to be insufficient awareness of the extent to which curricula and methods are determined by tradition or administrative convenience. The first Hadow Report recommended that secondary education should begin at eleven years of age. The adoption of this recommendation has meant that subjects considered as a result of current practice or grant regulation to be appropriate to the secondary grammar school curriculum could not normally be studied in our national school system until the child reached this age. The psychological grounds on which this decision was partly based, not to say excused, are no longer considered generally valid. Thus, we have a fresh opportunity of considering critically the age at which different curriculum subjects—in this case modern languages—should be introduced into the school. Such an alproach should be based on what we know of the development of abilities and aptitudes of pupils.[3] This is the

[1]The writer has taken part in Direct-Method training of foreign airline crews in English, where it would seem possible to approach the optimum conditions for success by this method.

[2]Gilbert, M., *op. cit.* [3]Education Act (1944), S.8.

procedure which would seem to be approved by the Ministry of Education in noting that " a modern foreign language may be taught in any type of school in England."[1]

The young child placed in a foreign environment is, of course, strongly motivated to become proficient in the language of that environment in order to satisfy his needs. In early childhood he has also the advantages of less rigid speech habits and the absence of inhibitive factors attributable later to the selfconsciousness of adolescence. Though evidence is not yet conclusive, it does not seem likely that the early learning of a second language has a detrimental effect on the mental development of the child, or gives rise to conditions such as stuttering, for example. This applies provided that a consistent source and method of presentation of the two languages is observed, and provided that psychological barriers and certain negative affective conditions are avoided. Amongst such barriers are religious and national animosities and affective conditions suggesting the superiority of the languages involved. This evidence is also subject to the provision that the languages are learned by spontaneous, informal or play methods, avoiding formal or task methods. A truly bilingual situation is found in this country only in certain areas of Wales and Scotland. In as far as it applies to Wales psychological evidence of the type discussed here has received corroboration by workers in the field.

Penfield, working in Canada, concludes that young children are physiologically better equipped to acquire language skills than are adults or adolescents. From his experience as a neurological surgeon he notes that there is an age when the special areas of the brain concerned with speaking, the understanding of speech, reading and writing, achieve optimum plasticity and that physiological evolution causes the brain to specialize in language learning before the ages of 10-14 years, after which it seems to become slower, more rigid and less receptive in this respect.

The available evidence is not yet conclusive, but is sufficient to suggest that modern language teaching might usefully begin during the primary school period—if it can be adequately motivated and if the general experimental background of the children is favourable to it. It is, of course, outside the scope of this article to consider the staffing difficulties involved, but a cursory examination of what is happening or about to happen in the field of mathematics teaching suggests that an earlier approach to modern languages would certainly be feasable if some re-deployment of suitably qualified teaching staff were undertaken.

The Classroom Situation

(*a*) *Intellectual Factors*

However sound the teaching of modern languages in the primary school may be shown to be, the fact remains that, for the immediate future at any rate, most pupils will begin to learn a first foreign language at about eleven years of age, to be followed perhaps by the introduction of a second language a year or so later. Intellectually, the pupil will generally be of above average ability. At the age of 12-13 years, however, differences in special abilities become increasingly apparent in a group of relatively homogeneous general ability. Two complex groups of these special abilities which appear particularly operative in modern language learning are verbal and memory

[1]Min. of Ed. pam. 29, p. 4.

abilities, and a reliable measure of these is of considerable assistance in predicting potential success and diagnosing probable causes of failure in language attainments, thus minimising wastage of teacher's and pupil's time.

Care must be taken not to infer from this that different standards of attainment in, say, French and German, indicate a failure to progress satisfactorily in one of these subjects on the ground that the same potential ability can be mobilised in each case. This would be to ignore the influence of the more highly specific abilities associated both with tackling particular language structure and with the type and degree of activity required by the teacher from the pupil in a given learning situation.

Another aspect of this problem is that of the learning burden encountered in learning a foreign language. This is a function of the structural and conceptual differences between the mother tongue and the foreign language, differences which may be highly relevant in comparing standards of achievement by the same pupil in different languages or in the same language by pupils of different linguistic background. Different modes of learning will also tend to produce different performance in the same pupils. For example, if German is taught merely by a process of rote learning, which involves a special memory factor not highly correlated with general ability, the order of progress in a group of pupils may be very different from that which might be obtained where greater stress is laid on the use of general ability. The significance of these facts is surely that when making comparisons in performance the modern language teacher must be aware of the variation in the potential abilities of pupils and in the learning burdens placed upon them by different languages.

(*b*) *Emotional Factors*

No one who has attempted to teach irregular verbs on a hot summer afternoon can seriously deny that affective factors operate in the modern learning situation, and yet it is not unusual to encounter among experienced teachers as well as amongst those in training a resistance to accepting the lessons of group psychology in class teaching. This may be explained in part by understandable mistrust of popularised psychoanalytic notions and in part by a feeling that attention to emotional factors may be made an excuse for lack of intellectual rigour. The fact remains that most of our foreign language teaching in schools begins and ends during the period of adolescence, a period of anxiety and internal disharmony in which new drives are constantly seeking outlets. The teacher cannot avoid this situation; he is faced with the choice of adapting his methods to make use of these drives or of engaging in a conflict with his pupils leading to negative motivation in the form of punishment and minimal learning as an avoidance reaction.

The adolescent linguist generally wants to be taken seriously and is concerned with utility as an end of his studies. His co-operation is thus readily assured if the subject matter of his studies is as much in accord with the interests of his age as stock replacement of class texts and material permits. A considerable number of course books using this approach has appeared since the war, and much narrative material in adult evening class courses appears eminently suitable from the point of view of interest for use in secondary school courses. Grammar instruction can be elaborated where necessary for examination purposes. An advantage of this material is that it humanizes the subject matter, relating the pupil first to his immediate environment and then to similar interests in the foreign

language environment. The need for a carefully graded approach to the learning of the grammatical structure of a foreign language after the speech habits of the mother tongue have become fixed does not posit the need to start with a vocabulary appropriate to the Victorian nursery. The position can appear even more ludicrous if the more expendable course books are replaced with modern texts whilst the eager young mind is encouraged to utilise its blossoming skill by extensive reading of *contes des fées*. A course book which takes both itself and the adolescent seriously forms a natural and workable basis for oral work, since it can be made to appear relevant to the adolescent's new consciousness of the world around him.

Another emotional trait relevant to modern language teaching in secondary schools is the adolescent's lack of confidence in himself and others. Few teachers would claim a degree of fluency in a foreign language which precludes occasional error becoming apparent. If the teacher's approach is too authoritarian, not only is the self-conscious adolescent discouraged from the active oral participation essential to effective language learning, but when this type teacher is seen to be in error, he tends to lose that confidence of the pupil which may be the only effective motivating force remaining in operation.

The adolescent who is called upon to stammer out the first words learnt in a foreign language is most likely to experience a feeling of embarrassment, especially if the incongruity of the unfamiliar sounds appears slightly ricidulous to himself and his compeers. It is likely that the pupil will become discouraged and bored if the insecure teacher does not resist the temptation to side with the group at the expense of the individual. One way of overcoming this type of difficulty is to make use of dramatization involving the whole group. This requires mutual co-operation, ensuring that the individual pupil is not the centre of curiosity. A number of books of graded playlets have been published in recent years, and some of the more recent course books contain texts in dialogue form, suitable for dramatization.

(*c*) *The Learning Process*

The factors discussed above are among the more important general ones governing learning and teaching foreign languages. It is beyond our present scope to attempt a reconciliation of learning theories, but some mention of their common basic aspects can be accepted and applied to the modern language class to help to crystalize the roles of the intellectual and emotional factors discussed above. These would suggest that, whereas a very young child might learn a modern language simply as a response to a social situation and as a set of demands to communicate, the adolescent child—more frequently the kind of pupil in modern language classes at the moment—might question the utility of the study and hence would require more positive motivation on the part of the teacher.

In the learning process, the effects of frequency, recency and exercise are especially apparent in oral work, which requires constant practice and repetition to form and retain the habits necessary for speech. The same process appears applicable to the learning of grammar, and it is in this sense that the newer concept of mental discipline, involving the formation and strengthening of correct responses or habits, is seen to operate. Language learning also requires the use of the intellectual processes of spontaneous analysis and synthesis of the course material and of speech in constantly different situations. If the

curiosity and interest drives of the adolescent do not find an outlet in spontaneous and varied activity beyond the mere formation of habit, a powerful potential source of motivation in fact merely adds to his conflict, which in turn limits the use of positively motivated activity methods.

The effective presentation of linguistic material to the pupil requires grading according to difficulty to ensure efficient assimilation. In this, regard must be had to the total burden imposed by the introduction of each quantity of new material, so that the introduction of new grammar points together with new text material is avoided. Unfortunately, this difficulty of excessive burdening is still encountered in some texts. It may arise partly from a desire to present new and hence potentially more interesting material with each section of the course book, but in practice it seems frequently to defeat the purpose of maintaining interest because it necessitates spending a prolonged period on the same material, even on the same page, and leads to boredom and the grammar grind. The practice of including a separately printed grammar section together with exercises after each comprehension passage in the foreign language text does not seem entirely to obviate this difficulty, since either the grammar material must be used at the same time as the comprehension passage, thus increasing and complicating the learning burden, or its use must be delayed until the context is " stale " and interest motivation is lost. One solution is to provide text material in which the vocabulary remains the same for the comprehension, grammar and exercise sections, but which contains new narrative in each section, without introducing extensive new vocabulary until the grammar has been mastered and practised. This tends to minimise resistance produced by consolidated mechanical and automatic drill, which, though essential, do not appear so burden some. It also provides a more interesting way of doing revision. This is in no way to minimize the need to repeat and practice the mechanics of the language to the point of overlearning, particularly in the early stages of the course, but it does take account of the emotional factors involved in the learning situation.

Conclusions

This initial survey is concerned with a consideration of the general problems affecting the teaching of modern languages, particularly in the English Secondary School. A later one will take into account some of the research work which has already been completed and which bears on these problems, particularly regarding the prediction of success and the measurement of attainment and importance of personality factors in modern language courses. It is apparent that there is still a great deal of objective investigation to be done before the major difficulties encountered in language teaching have been fully evaluated. First, it seems necessary to avoid the tendency to think of the systematic methods, such as the Direct or Oral Methods, as coherent wholes based on objective evidence. It would also seem necessary to make some reliable estimate of the foreign language burden, at least as far as English language background is concerned. Leaving aside the question of the objective measurement of aesthetic abilities in the literature papers set in public examinations, it would also seem highly desirable to prepare and use more standardized attainment tests in all the languages commonly taught in our schools. It would also be helpful if, at the same time, the opportunity were taken to press for a revision of the form

in which syllabuses for language papers in examinations are defined. A basic word list might perhaps be provided at, say, the Ordinary Level of G.C.E. and structural difficulties approached in an order of graded difficulty which would also have to be established objectively. These latter points will take time, but there is nothing to stop the interested teacher going ahead with the preparation of standardized attainment tests with the methodological and statistical help of his area University Institute of Education, if such facilities are available there.

Bibliography

BOARD OF EDUCATION. *The Education of the Adolescent.* London: H.M.S.O., 1927.

FINDLAY, J. J. "The Psychology of Modern Language Learning." *B. J. Ed. P.*, Vol. II, 1932.

GILBERT, MARK, "The Origins of the Reform Movement in Modern Language Teaching in England.' *Dur. Res. Rev.:* Part I, No. 4, Sept. 1953; Part II, No. 5, Sept. 1953; Part II, No. 6, Sept. 1955.

HALLORAN, J. H. "Esperanto as an Introduction to French." *B. J. Ed. P.*, Vol. XXII, Pt. III, 1952.

JONES, W. R. "The Language Handicap of the Welsh-speaking Child." *B. J. Ed., P.* Vol. XXII. Pt. II, 1952.

JONES, W. R. "Welsh as a Second Language." *B. J. Ed. P.*, Vol. XIX, Pt. I; Vol. XX, Pt. II.

MINISTRY OF EDUCATION. *Modern Languages.* London: H.M.S.O., 1956.

NEALE, L. W. "The Development of Reading Ability in French and its Measurement in the Grammar School Course. *Dur. Res. Rev.*, No. 4, Sept. 1953.

ORMISTON, MARY. "The Learning of General and Special Abilities on Scholastic Success at the Beginning and End of a Secondary School Career." *B. J. Ed. P.*, Vol. IX, Pt. II, 1939.

PENFIELD, W. "A consideration of the Neuro-physiological Mechanisms of Speech and some Edncational Consequences." *Amer. Acad. Arts and Sciences, Vol.* 85, *No.* 5.

PETCH, Y. A. "A Comparison of Orders of Merit of H.S.C. Candidates Offering Two Modern Languages." *B. J. Ed. P.*, Vol. XV, Pt. III.

ROBSON, WINIFRED F. "The Vocabulary Burden in the First Year of French." *B. J. Ed. P.*, Vol. IV, 1934.

STREVENS, P. *Aural Aids in Language Teaching.* London: Longmans, Green & Co., 1958.

THE INCORPORATED ASSOCIATION OF ASSISTANT MASTERS IN SECONDARY SCHOOLS. *The Teaching of Modern Languages.* University of London Press, 1952.

UNESCO. *The Teaching of Modern Languages.* Ceylon: Unesco, 1953.

VALENTINE. *Psychology and its Bearing on Education.* London: Methuen, 1950.

BILINGUALISM IN WALES: AN ASPECT OF SEMANTIC ORGANISATION

by Cyril B. E. James

Senior Psychologist, Carmarthenshire L.E.A.
Consultant to Pembrokeshire and Cardiganshire

Bilingualism—A Vital Issue

THE Report of the Central Advisory Council for Education (Wales)—" Lle'r Gymraeg a'r Saesneg yn Ysgolion Cymru "—" The Place of Welsh and English in the Schools of Wales " is only one of a series of documents drawing attention to the problems of bilingualism in Wales. " The study of bilingualism," says the report, " is of considerable general interest, especially to psychologists, sociologists and students of education. But in Wales, on account of the great danger in which the Welsh language finds itself, bilingualism has more than a general or academic interest; it has become a matter of national concern."

Wales is a country with a language of its own and a literature which has a history of over a thousand years, but it is, nevertheless, linked to England by geographic, economic and political ties. In the Principality, the two languages, English and Welsh, exist side by side. Hence, educational policy has rightly been based on the acceptance of both. The Central Advisory Council for Education (Wales) suggests that the primary school should safeguard the home language of the child and encourage its use as a medium of his education, whilst the second language should not be taught formally until the child has left the infants' school. Emphasis is also placed on the necessity to ensure continuity of policy between primary and secondary schools in the same area, with regard to the teaching of the two languages and to their use as a media of instruction.

In a debate in the House of Lords (November, 1958) a former Colonial Secretary, Lord Ogmore, pointed to the wider significance of bilingual policy, not only in Europe, but in Asia and Africa. One of the most vexed questions, he said, with which statesmen have to deal is that concerning the stage at which the vernacular language should be taught and when one should teach the international languages—English, French or whatever might be the tongue of the colonial power.

As far as Wales is concerned, Lord Brecon, Member of State for Welsh Affairs, said during the same debate, that of the seventeen local authorities, ten had adopted the Central Advisory Committee's policy on bilingualism, two had a modified policy, and five had no policy at all. The magnitude of the problem becomes apparent when it is realised that of a total population of two and a half million, according to the last census, 714,000 (nearly a third of the population) speak Welsh.

Definitions of Bilingualism

For research purposes the complexity of the problem must be recognized in any definition. The Advisory Council states: " Bilingualism implies the simultaneous

learning of, though not necessarily an equally proficient control over, two languages by an individual child, sometimes from an early age, on account of compulsions within his social environment."

This definition, however, needs amplification. Bloomfield defines bilingualism as a " native-like control over two languages "; and Leopold extends this definition further and states that " Bilingualism is the ability to speak two languages which are spoken equally well for all purposes of life. In practice only approximations to this ideal can be expected. Bilingualism is a fact even when one language is spoken better and more extensively than the other, as long as both are regularly employed as media of intercourse."

Broad grades of bilingualism are readily distinguished. Saer, at an International Conference on Bilingualism in Luxemburg, divided them into three bilingual types and monoglot. The monoglot are children who have no effective comprehension of a second language. Except among very young children, it would be difficult to find such children in Wales. The lowest degree of bilingualism is shown by those who comprehend simple questions in the second language but fail to make use of it in their answers. Next come the average bilingualists who possess a good comprehension of the mother tongue and a good degree of facility in using it, together with a lower ability in using and understanding the second language. Finally, there are the bilingualists who speak their mother tongue regularly and take enough interest in it to read it, but who have also arrived at a good degree of facility in speaking the second language and make good progress in reading and writing it.

However, even within such gradations, there are a number of diverse elements which must be differentiated. In thinking of any particular child or group of children in a bilingual situation, we must take account of such things as the effect of intelligence, age and method of acquiring the languages, the type of linguistic background of the home, the school, and particularly the playground, the attitude of the child and of those with whom he is in close contact towards the second language, his socio-economic level, as well as the educational, religious, administrative and political influences which affect him both directly and through the effects of broader issues of local policy.

Clearly, too, bilingualism is an additional hazard of which account must be taken when attempting to assess the personality and the potentialities of a child. It is at this point that some research workers have confused the issue by attempting to apply purely statistical techniques (rather than experimental) in order to partial out the effect of certain of the variables under discussion. Not the least among the difficulties which the research worker has to face is, in fact, the effect of varying degrees of bilingualism (within the environment and in the child himself) on the semantic organisation of different children. These differences, which are reflected in mental functioning and structure, can hardly be dealt with by mainly statistical means. We are faced with the same order of problem as makes cross cultural research difficult.

Problems of Research into Bilingualism in Wales

From the point of view of the research worker in Wales, then, the factor of bilingualism, complicated by the varying degrees of linguistic facility achieved by various children ranging from high to low intelligence and affected by different socio-economic influences,

makes it extremely difficult to design an experiment to ascertain the most effective method and curriculum for teaching any particular bilingual child.

It is, however, evident that research into the problem of bilingualism is important for teacher and the psychologist, for the administrator and the medical officer, if indeed education and guidance are to be employed to the best advantage of Welsh children. But it is well to remember that language serves but as a vehicle to convey the cognitive, conative and affective expressions of the individual, that the individual himself may, in turn, be subject to a variety of influences which promote or inhibit the development of his personality, and that the degree with which he will cope successfully with his environment will depend on his emotional development and the functional level of his intellectual capacity to overcome any socio-economic or other difficulties which he may have to face.

Under the direction of Professor Idwal Jones the Collegiate Faculty of Education at Aberystwyth published " A Review of Problems for Research with Bilingualism and Allied Topics " based on the investigations by the research assistant (Dyfnallt Morgan) into the schools of the Faculty area and the detailed work of the former advisory officer (A. Pinsent). The preface states that not only should this statement serve as a programme of work for the Collegiate Area as opportunities arose, but as a " blue print " for all research work connected with bilingualism in Wales. So much has been written in purely general terms about two-language teaching and learning, and so little exact work done, that a planned layout of the problems involved is timely and salutary and workers in the field will be helped to find specific projects and to see how their work might be co-ordinated.

So detailed are the recommendations of this pamphlet and so imaginative its suggestions for topics of research that a summary would not do it justice. However, the following may be helpful to the general reader. In brief, it states, the scope of research work might legitimately include experimental investigations, surveys of conditions as they exist at the present time, historical studies, and the collection and arrangement of bibliographies and other source material for ready reference by research workers and teachers. Among the many topics for research, the pamphlet suggests the following:

(*a*) the need to construct the necessary " tools " for investigation, such as standardised tests of reasoning, attainment and attitude.

(*b*) Studies requiring the use of such special research " tools," including:

(1) Definition of concepts. Case Studies.
(2) Studies of intelligence test performance in relation to degree of Welsh linguistic background.
(3) Studies of development of educational attainment in relation to Welsh linguistic background.
(4) Surveys or studies to determine the comparative efficiency of alternative methods of language teaching.
(5) Studies of " language mixture " and its effects on learning.
(6) Methods of selection for, and allocation to, types of secondary education in mixed language areas.
(7) Studies of attitudes and incentives in connection with teaching and learning Welsh/English.

(*c*) Investigations not requiring special research tools—ranging from studies of word frequencies to the curriculum, methodology, and sociological background of the schools.

Though not exhaustive this list of problems does enable the student of semantic organisation to have the right perspective in regard to his particular field of work.

Optimum Age for Introduction of Second Language

Not the least among the problems is one which has obsessed students of language teaching generally: that of the best age at which to begin teaching a second language. Drever, in his monograph on *Early Learning and the Perception of Space*, introduces the crux of the problem by pointing out the distinction drawn by Hebb between early and late learning, he suggests, organisation occurs in the non-specialised cortical areas and this organisation acts as a basis for perceptual skills and insights, upon which the later learning in part depends. Though of wide generality, this suggestion is not merely speculative. It can be used to make predictions about subjects who have or who have not had opportunity for certain kinds of early learning. Piaget confirms Drever's statements on the importance of studying the relationships between perception and intelligence and suggests that there are three main principles involved: " On peut réduire à trois grands types, les diverses interprétations que l'on a proposées quant aux relations entre la perception et l'intelligence: action directrice de l'intelligence ou continuité entre deux modes analogues mais distincts et successifs de composition."

Penfield goes further and states that there is an age when the child has a remarkable capacity to utilize these areas of the cerebral cortex for the learning of language, a time when several languages can be learned simultaneously as easily as one language, and that later, with the appearance of the capacity for reasoning and for abstract thought, this early ability is largely lost. " He who is mindful of the changing physiology of the human brain might marvel at educational curricula. " Why," asks Penfield, " should foreign languages make their first appearance long after boy or girl had lost full capacity for language learning? " Briggs, speaking from his teaching experience in North and Mid-Wales, suggests that children should begin to learn foreign languages at the primary level. Williams,* Area Advisory Officer to the Collegiate Faculty at Aberystwyth, in an article " Two Languages in School " (Y Ddwy Iaith Yn Yr Ysgol) goes further and states that the second language should be taught before the age of seven. He is of the opinion that children whose mother tongue is English would be more successful in learning Welsh if much more time were given to the teaching of that language before the child was seven years old, in order to induce them to play and live in the atmosphere of the Welsh language, at the ages of four to seven, particularly if the mother tongue has already been established.

It would seem that many experienced workers from other countries also believe the early teaching of a second language to be a prerequisite if a child is to become truly bilingual. If true, this basic assumption is important in such countries as Wales, where there is a need to foster bilingualism both in order to broaden the personal development

*Jac Williams : " Tybed a fyddai'r llwyddiant a geir gyda'r plant bach yn llawer mwy pe rhoddid cryn dipyn of amser at ddysgu'r Gymraeg iddynt cyn eu bod yn saith oed, gan eu harwain i chwarae ac i fyw yn yr iaith Gymraeg pan fônt yn 4-7 oed, os yw eu mamiaith yn sefydlog."

of the individual and to effect his closer relationships with those of his own kin and tradition as well as with those from different linguistic culture. It would be more broadly important also in a time when the governments of Europe are seeking to co-ordinate their economic planning in terms of " six group " and " seven group " multilingual and multiracial communities.

Bilingual Education in Various Countries

In the foregoing discussion we have noted the multiplicity of factors which must perforce be taken into account in assessing the efficiency of a bilingual policy in Wales. *Mutatis mutandis*, similar educational problems are present in other countries where two languages and two cultures exist side by side. Hence, a better perspective of the total picture is gained by paying some attention to aspects of bilingualism in other countries and at the same time bearing in mind that small " linguistic islands " occur in the larger cosmopolitan cities of the U.S.A. and elsewhere.

O'Doherty, writing on the Educational Aspects of Bilingualism in Ireland, has stated that the difference between the Irish situation and that of Wales, the Scottish Highlands, the Belgian Walloons, Spanish Catalan-speaking children and of Breton-speaking children in France, is that the plan for bilingualism in those countries rests primarily on consideration of the child's welfare and on sound psychological principles. This is given expression, for example, in the principle enshrined in the Belgian constitution, Article 20: " Dans toutes les écoles communales adoptées ou adoptables, la langue maternelle des enfants est la langue véhiculaire aux divers degrés de l'enseignement." In *Ireland*, however, states O'Doherty, " in one sentence, what it comes to is this, our present pseudo-bilingual policy is based on emotional, political and historical factors, to the neglect of pedagogical, psychological and social considerations." On the other hand, Domhnallain, Inspector of Schools, testifies to the success of the bilingual educational policy in the twenty-six counties of Eire. As a result, he says, there is no doubt that an astounding degree of success has been achieved in restoring the Irish language in the schools, even if no comparable success has been achieved in reviving it outside the educational system.

The nature and background of bilingualism in *Finland* has been the subject of a article by Denison, who describes how Finnish and Swedish flourish side by side in the face of political pressure from Russia. He concludes, that of Finland it is certainly true to say that the cultural pressures played a greater part than the political, though it would be difficult to say whether the rise of linguistic and cultural patriotism in Finland would have been as spectacular, or indeed possible, without the accident of political separation from Sweden. From the point of view of national psychology, it is of interest to note that the period which saw the most rapid development and the most intense cultivation of Finnish, during the years preceding 1900 and continuing up to the first World War, coincided with the Czar's efforts at Russification.

A situation report on linguistic organisation in *South Africa* by Libenburg, Chief Inspector of Schools for Cape Town, indicated that the variations and combinations occurring at the various levels in the class structure of school administration in order to foster Afrikaans and English, is such that pupils become so proficient in their understanding

of both languages that it is immaterial to them afterwards through which language the instruction is given.

In *Belgium*, the policy is that French and Flemish have equal status and " the legal position is that the head of the family shall decide which of the languages, French or Flemish, is the mother tongue or habitual language of the child; but this decision may be set aside by the school, the State Inspectorate, or an official linguistic commission who have the power of modifying the effect of the decision made by the head of the family."

In *Switzerland*, the four official languages are German, French, Italian and Romansh. Language teaching is of particular importance, since professional and business men at least find that a minimum facility of comprehension in the three main official languages is essential for ease and efficiency in their work. In addition, English is considered an essential part of their linguistic equipment.

Multiplicy of Influences other than Linguistic on Educational Methodology

It will not be out of place to remind ourselves for a moment that a multiplicity of influences other than the linguistic affect the development of personality and that bilingualism, as such, is but one among many influences which affect a child's educational progress and mental health.

Thomson points out that, " growing up, as we do, into a society speaking one mother tongue and daily using thousands of phrases and catchwords which imply judgments, we are very liable to acquire the phrases and catchwords without any real consideration of the judgments involved. So we become little Englishmen, or Frenchmen, Turks or Prussians; so we become little Liberals and little Conservatives."

The Welsh Department of the Ministry of Education, speaking of the special characteristics of Welsh Culture, stresses the wider influence " that each country reveals in its beliefs, manners, customs and literature; elements that are peculiar to it alone. It is by developing these, by creating conditions whereby the best that lies in the particular genius of the nation can flourish." Hence, research into the influence of bilingualism in child development involves the student in an appraisal, not merely of the relative effects of socio-economic emotional and intellectual factors in addition to the linguistic, but in an analysis of the very culture itself that shapes the structure of his thought and beliefs.

Implications of Special Educational Treatment for Bilingualism

The relationship between the growth of language and the growth of concepts and hence between bilingualism and intelligence must loom large in the mind of the research worker, particularly in regard to arrangements for suitable educational treatment for exceptional children. The education of the mentally handicapped child, for example, raises the problem of how far should such children pursue any formal study of a second language.

The emotional factor also bears strongly on the problem of bilingualism, for often children who are disturbed find difficulty in expressing themselves and in making progress at school. Their whole development is adversely affected by the inhibiting influences of a social or emotional handicap. Maladjusted children who suffer from nervous,

habit and behaviour disorders are difficult to assess since the functional level of their performance varies with degrees of impairment.

It will be seen, therefore, that when carrying out research into bilingualism in Wales any aspect of semantic organisation may be obscured by influences other than the purely linguistic. Account must, therefore, be taken of the physical, emotional, intellectual, educational and social development of that 10-15 per cent. of children who, in one way or another, deviate markedly from the normal. The sample of population chosen for investigation, therefore, must allow for this as well as being a representative cross-section of groups varying from the monoglot to the fully bilingual.

Functional Level and Underlying Structure of Intelligence

In view of the many factors that produce variable results in the testing of a child's reasoning power and attainment, it is suggested that it would be better to speak of the " functional level of intelligence " rather than of the " intelligence estimate (I.Q.)," *per se*. Such a concept enables teachers in the classroom and psychologists during their clinical examinations to keep an open mind about the results obtained from tests whether they be group or individual.

Much of the controversy concerning variations of test scores (as a result of coaching, or the effect of environment as opposed to heredity, or urban as compared with rural background, or bilingual performance as contrasted with monoglot accomplishment), appears to spring from two main sources. There may be a considerable difference between a child's performance on a group test of ability or of scholastic attainment and the estimate arrived at from clinical tests administered individually. In constructing a range of items for a test, one tries so to arrange them that differentiation is possible between levels of thinking, shading gradually from the simple association of ideas at the perceptual level to relational thinking at the perceptual level and subsequently to conceptual thinking at the abstract level. As the present writer has pointed out in his critique, " Bilingualism and Non-Verbal Reasoning "—when attempting to assess the personality of a child (or children) for purposes of research, or with a view to educational guidance, one would do well to be careful in one's choice of measuring instruments, particularly before arriving at broad generalisations which may have practical implications in the field of educational policy. Data which are both quantitative and qualitative can be equally valuable in reaching conclusions, whether such data be based on the results of group tests or teacher's estimates, on the one hand, or on the individual test and clinical examination on the other. In psychological science quantitative accuracy is a relative term for no child can be reduced to a statistic.

Much of value can be obtained from the studied use of statistical method, but the value can be enhanced by the cross-fertilisation of the quantitative—scholastic and the qualitative—therapeutic techniques through including both nomothetic and ideographic procedures. Only then can one make an adequate analysis and synthesis of relevant aetiological factors of the case which may be followed by a tentative diagnosis. This holds true whether we apply our techniques to the assessment of pupils with a view to " streaming " within classes, transferring them from primary to various types of secondary schools in Wales, or to the ascertainment of handicapped pupils in need of special educa-

tional treatment. In such circumstances one would use a variety of test instruments and weigh in the balance a multiplicity of factors including the influence of degrees of bilingualism as opposed to bilingual background.

Morrison sums up in relation to Gaelic and Welsh-English bilingualism in the following way. He states that educational guidance, a difficult, skilled and chancy task even in the best conditions, is doubly so in a bilingual region. It is a task virtually impossible to discharge satisfactorily without the following desiderata:

(i) a knowledge of the children's vocabulary in both Welsh and English, at various ages but especially at the age of 11-plus;

(ii) a measure of bilingual background, probably on the lines of the Hoffman Schedule, adapted and validated for the specific bilingual situation;

(iii) tests of capacity and attainment adapted or specially devised and standardised or re-standardised on children of varying degrees of bilingualism as measured by (ii);

(iv) some at least of the tests to have no time-limit.

It appears, too, from the above, that the technique of language teaching is of vital importance to the communities concerned, and as Thomas has pointed out, the administrator's approach to the implementation of bilingual policy is particularly important since it is on a successful linguistic policy that the system of educational and vocational guidance is based.

A bilingual policy implies the intention to maintain if not increase the number and proficiency of those speaking both languages. As may be seen by the remark earlier cited from Eire, this does not apparently depend solely upon educational policy, important though this is. Confirmation comes from two studies of incidence. One by Jennie Thomas, surveying Caernarvonshire in 1952, noted that no significant change in the language pattern of the county has taken place since the surveys of 1944 and 1948. She reported that the maintenance of the Welsh-speaking percentage at a uniformly high level in spite of the powerful anglicising forces which were potent throughout the county, could be attributed to two vital factors. The first was the bilingual policy enunciated by the L.E.A. and carried out by successive Directors of Education in association with generations of teachers. The second she attributed to the widespread, virile social and religious life which existed in all cultural institutions in both urban and rural areas. The existence of this strong social influence was reflected in the local and national press and ultimately in the live Welsh language spoken in the majority of the homes.

In South Wales, however, the opposite tendency has been noted by Davies who, in his work on " The decline of the Welsh language in a sample of the Faculty area," stated that there had been a continued deterioration in the position of the Welsh language in the communities concerned. There had also been a similar decline in the power of the Welsh cultural agencies, particularly in the areas of the greatest concentration of population. Many causes had been enumerated for the disappointing results of the teaching of Welsh in schools as a second language—the shortage of adequately trained teachers, lack of enthusiasm, faulty methods and the supremacy of the English language outside the classroom. Serious thought would have to be given to this aspect of language teaching,

if bilingual policy in the schools is to achieve any measure of success: but it would be foolish to neglect also the interaction between language teaching and learning and the general quality and liveliness of the surrounding culture.

Earlier work on psychological aspects

Most of the research work by Welsh scholars into the psychological aspects of bilingualism had been concerned with testing the mental development of bilingual children, especially with the significance of the verbal factor and the attempt to determine whether bilingualism adversely affects intellectual growth. Early investigations in this field were conducted by Saer, Smith, Barke and Parry Williams. Their methods and results, which suggested some inferiority on the part of bilingual children, were generally accepted in the past, but recent investigators have criticised them for various reasons. It has been maintained that some of the tests were inappropriate and that the results were not always interpreted accurately. Moreover, no assessment of the bilingual background of the subjects was made to ensure reasonably uniform groups, and the statistical treatment of the data was by contemporary standards inadequate. Later investigations in the same field by Jones working alone, and in collaboration with Stewart and also by James, have attempted to avoid these errors. But the paucity of the results from Wales and the lack of consistency among them obliges one to agree that there are few firm conclusions and fewer conclusive arguments so far to be drawn from Welsh evidence.

Evidence from investigators in other bilingual countries needs cautious interpretation in the light of Welsh conditions. However, after a study of the work of men like Gali, Hoffman, Pintner, Prescott, Malherbe and others, the writers of the report on " The Place of Welsh and English in the Schools of Wales " finally agree with Arsensian, who remarked, " Bilingualism, that is the simultaneous learning of two languages from infancy, has no detrimental affect on the child's mental development provided: (*a*) that at the earliest stages of the child's language development a consistent method of source and presentation of the two languages is observed, that is, ' une langue, une personne '; (*b*) that psychological barriers or negative conditions such as inferiority or superiority of the language involved, or national or religious animosities are absent; and (*c*) that the languages are learnt by spontaneous informal or play methods and not by formal or task methods." The reader who wishes to pursue his interest further should refer to the detailed statement in the report of the Central Advisory Council for Education (Wales), including the discussion of research work on some of the psychological considerations in relation to bilingualism.

Current Researches involving Bilingualism

Within a limited compass it is not possible to give an exhaustive account of current researches in the field of bilingualism in Wales and we will, therefore, confine outselves to four main trends of investigation, namely:

(*a*) the study of Welsh semantics;
(*b*) test construction;
(*c*) the application of psychological techniques to secondary allocation;
(*d*) the effect of bilingualism on educational attainment.

(*a*) *Semantic Organisation*

In addition to its broader research programme outlined above, the Faculty of Education at the University College of Wales, Aberystwyth, under the leadership of Professor Idwal Jones, J. R. Morrison and Jac Williams, is applying the technique of linguistics to a study of the Welsh language. It is hoped that this study will facilitate the work of teachers of Welsh in English-speaking areas of Wales. A more or less complete classification of commonly-used words, according to their morphological pattern, is aimed at and syntactical forms are being studied with the intention of proceeding with the grading of sentence patterns. This basic and essential analysis and classification of word-forms and sentence structure should put the teaching of Welsh as a second language on a sound foundation and enable teachers to practice approved modern methods of presentation in a classroom.

(*b*) *Test Construction*

In the field of test construction, progress has been made in several directions. In Pamphlet No. 3 of the University College of Aberystwyth, Department of Education, Pinsent describes " The Construction and Use of Standardised Tests of Intelligence and Attainment "—with special reference to problems of a mixed language area.

In the Department, several group tests of intelligence and Welsh attainment have been, or are, in course of being standardised:

(i) A Welsh Word Recognition Test by J. L. Brace (Pamphlet No. 5).

(ii) A Welsh Intelligence Test (Prawf Deallusrwydd).

(iii) A Welsh Attainment Test (Prawf Iaith Gymraeg).

(iv) A Welsh Linguistic Background Scale by Gwenda Rees.

Work of this nature at Bangor University College also aims at assessing various aspects of Welsh as a school subject. Tests of attainment and non-verbal reasoning have been constructed for this purpose by Jones.

The Carmarthenshire Local Education Authority, in conjunction with the N.F.E.R., has produced a Bilingual (English/Welsh) version of a N.F.E.R. Non-Verbal Reasoning Test administered and standardised by James and Pidgeon over the complete eleven-plus group of the county.

Under the aegis of the North Wales Child Guidance Clinics, Morgan, Williams and Simmons, in consultation with Peaker, are proceeding with the development of standardised tests suitable for grading and assessing children in the classroom. Of particular interest is the work on the adaptation of the W.I.S.C. for use with Welsh-speaking children. This project has now reached the stage where three preliminary drafts of verbal items have been administered to a random sample of approximately 300 children, and as a result of item analysis, the first draft of verbal items on the basis of " difficulty " and " discrimination " values has been prepared. In addition, the non-verbal scale is complete in its provisional form. Thus, the first full but still provisional version of the complete scale (verbal and non-verbal sections) can be used with a random sample of approximately 1,000 children for final standardisation in 1960.

An *Oral Language Questionnaire* has also been constructed for individual use in order to determine whether a testee shall be tested in Welsh or not. This is necessary as no other satisfactory method for selecting the most suitable language is available.

This questionnaire was tested on two occasions on two representative and random samples of the primary school population of North Wales, about 550 children being interviewed individually. The test sample was selected on the basis of an enquiry form circulated to head teachers with the assistance of the local education authorities. The information thus obtained provided up-to-date details of the number of Welsh-speaking children in North Wales, stratified according to age, sex, class and school. On the basis of this information a sampling scheme was drawn up and a random sample was made of schools for the purpose of testing test items. The answers were subsequently analysed in detail and the results so far obtained give grounds for hoping that the final form of the questionnaire will be both accurate and reliable.

(*c*) *Allocation to Secondary Schools*

Not the least among practical problems of an L.E.A. when it seeks to implement a bilingual policy is the question of the allocation of pupils to secondary schools. If, indeed, in the words of the Carmarthenshire L.E.A., we hope to establish a system of educational guidance merging gradually into a form of vocational guidance which will enable pupils at any stage in their school career to make the most of opportunities afforded to them, then the differential effects of each child's linguistic background must be taken objectively into account. Thus, as well as the usual practice to allow for age and possibly sex differences, one has to partial out the effect of various influences in linguistically mixed areas.

In Carmarthenshire, in 1958 a Pilot Scheme was tried out and proved satisfactory. The head teachers' assessments (order of merit lists) scaled by means of a Bilingual Version of a Non-Verbal Reasoning Test in accordance with the technique proposed by Yates and Pidgeon, taken together with external tests in Welsh, English and Arithmetic, proved to be an excellent criterion for the allocation of pupils to secondary schools. Order of merit lists from seventeen schools were taken at random, from various areas throughout the county, ranging from complete first language English, through linguistically mixed schools, to first language Welsh schools, and the results were analysed by the N.F.E.R. The correlations between the order of merit lists and the total external examination scores proved to be highly significant in their degree of agreement in rating the abilities of children.

It is important to note that the specially adapted Non-Verbal Test, with bilingual instructions in English and Welsh, proved to be a useful scaling instrument because it had a reasonable positive correlation with attainment and teachers' judgments, particularly in view of its consistency within each school, where the scores were distributed over the same range as the examination marks.

(*d*) *Bilingualism and Educational Attainment*

Earlier research workers concerned with the influence of bilingualism on the intellectual and educational development of children tended to confine their work to a more or

less descriptive and literary approach to the problem. Some, however, studying attainment by more or less objective means, came to the conclusion that bilingual children tended to have a somewhat lower level of attainment, especially in reading.

The present writer made a " Comparative Study of General Performance Between Bilingual and Monoglot Children in South Wales " (1947) and used the statistical technique of Analysis of Variance in an attempt to partial out various influences which might affect test results and to isolate the effect of the " bilingual factor." His basic purpose was to try out a careful experimental design which might be adapted for use on a wider scale. The technique allowed him to study the differences, if any, between the performances of graded groups of bilingual and monoglot children. His tentative conclusions were that pupils of high intelligence profited from a bilingual educational policy, children of average mental capacity did not appear to be adversely affected by it, but that slower learning children and those who were mentally handicapped experienced augmented linguistic difficulties when attempting two languages. If these conclusions are true, it would seem that there is need for a modified " language of the hearth " policy for such pupils. Further, on the assumption that bilingual and monoglot groups are equally intelligent initially, we must emphasise the need to assess the relevant socio-economic influences before weighing the effect of bilingualism in the balance of educational attainment.

A similar experimental and statistical technique was employed by Jones (but without taking account of the assumption as to initial intelligence levels) in his work " Language Handicap of Welsh-speaking Children: a study of their performance." Subsequently, the same technique was used by Jones, Morrison, Rogers and Saer in their research on " The Educational Attainment of Bilingual Children in Relation to their Intelligence and Linguistic Background." Their main findings were: (i) that variations of language conditions, as a result of introducing a second language, do not (as one might expect) have an adverse effect upon Mechanical Arithmetic and only a moderate one on Problem Arithmetic administered in English; (ii) that the performance of predominantly Welsh-speaking children in English reading and usage is not equal to that of the predominantly English and Mixed English groups between ten and eleven years of age, but that the Mixed Welsh groups did not compare unfavourably with the English groups in this respect; and (iii) that the level attained by the Mixed Welsh group in Welsh reading and usage was significantly lower than that of the predominantly Welsh-speaking group at this stage.

These conclusions are described by the authors as tentative. It must also be stated that there were certain weaknesses in the design of the experiment. Jones, in his most recent work, " Bilingualism and Intelligence, 1959," tends to accept the assumption of the present writer that " various groups of monoglot and bilingual children do not differ significantly in intelligence, provided that they are also of similar socio-economic status as indicated by parental occupations," and he concludes that bilingualism, as such, need not have an adverse effect on performance in a non-verbal test of intelligence. Furthermore, the findings on this third occasion also suggest that the significant differences in non-verbal test scores observed between the four linguistic groups on the other two occasions arise from occupational rather than linguistic variations between the groups, since variations of the latter kind were equally present on each of three occasions.

Apart from indicating that bilingualism is not necessarily a source of intellectual disadvantage, the study of Jones and his collaborators has drawn attention to the influence of socio-economic factors in comparisons between groups of monoglot and bilingual children and has emphasised the importance of such factors in the correct interpretation of test results. Hence, many of the comparisons made in Wales and elsewhere between monoglot and bilingual groups, if they have omitted to allow for this important influence, must be regarded with great caution.

The Future of Bilingual Policy

What of the future? We may quote Jac William's remark that " it is probable that consciousness of being Welsh has existed in the Principality ever since the inhabitants of Wales were separated from those of Cornwall and Cumberland as the result of Anglo-Saxon penetration to the West Coast of Britain in the sixth and seventh centuries A.D. . . . but in recent years there has been an increase in national consciousness . . . and there has developed a general pride in having a national language and general desire to keep it alive." He ends by saying that: " At the present time it appears that the bilingual society to be found in Wales is in the process of developing norms, behaviour patterns and goals, that may enable a state of linguistic equilibrium to be achieved in a stable bilingualism and so enable the national language of Wales and the culture that is associated with it to survive."

The ever-present problem of bilingualism can, then, be considered from two points of view: the first from the relationship of the actual performance of the child and the functional level and underlying structure of his intelligence, and secondly from the less tangible effect of " Sprachmischung " (Admixture of Languages) on the one hand and " Kulturmischung " (Overlapping of Cultures) on the other, on the outlook of the individual and the general development of his personality.

The University of Wales is also seeing this problem in a new light and is encouraging the bilingual policy by, for example, making appointments in some of the Arts Faculties of lecturers to teach through the medium of Welsh. Likewise, the Welsh Joint Education Committee set up a panel in 1956 to handle bilingual teaching in the Secondary schools and to suggest methods by which the continuation of the bilingual training for children attending primary schools where Welsh is the first language should be developed and furthered.

It would not be inappropriate to end on this note by quoting the Welsh Department of the Ministry of Education on the problem of Educational Guidance in Wales. " Investigations to discover the most appropriate forms of school record cards and of diagnostic tests for use in Wales, where the language differences complicate the problem of standardisation, should be undertaken immediately. The need for such research is urgent for on its result will depend not only the possibility of an adequate educational guidance service in Welsh Secondary Schools, but also the eventual development of an effective system of vocational guidance for the youth of Wales."

We may, perhaps, hope that the forthcoming National Survey for Wales, to be conducted by the Welsh Joint Education Committee and the N.F.E.R., will provide some of the information necessary for these purposes.

Bibliography

BLOOMFIELD, L. *Language*. New York, 1933.

BRACE, J. L. *A Welsh Word Recognition Test*. Pamphlet No. 5, Univ. Coll. Wales Fac. of Ed.

BRIGGS, E. R. "Acquiring a Second Language: New Light on the Problem," from Cités-Unies, *Le Monde Bilingue*: No. 9, November, 1958, pp. 26-27.

CARMARTHENSHIRE, L. E. A. "Keeping Open the Door of Educational Opportunity." Carmarthenshire Local Education Authority Policy Statement, 1958.

DAVIES, J. A. "The Decline of the Welsh Language in a sample of the Faculty Area." *Bulletin No.* 6, Univ. Coll. Aberystwyth Fac. of Ed.

DENISON, N. "The Nature and Background of Bilingualism in Finland." *Bulletin No.* 3, Coll. Fac. of Ed., Aberystwyth.

DREVER, J. "Early Learning and Perception of Space." *Am. Journ. Psych.*, Vol. 68, No. 4, 1955.

HANSARD. *Parliamentary Debates: House of Lords Official Report: 26th November*, Vol. 212, No. 14, 1958.

HEBB, D. O. *The Organisation of Behaviour*, 1949, pp. 109-120.

H.M.S.O. *The Place of Welsh and English in the Schools of Wales*. Report of the Central Advisory Council for Education, Wales, 1953.

H.M.S.O. *The Future of Secondary Education in Wales*. 1949.

H.M.S.O. *Bilingualism in the Schools of Wales*: Y Broblem Ddwyieithog yn yr Ysgol Uwchradd yng Nghymru: Welsh Department, Ministry of Ed. Pamphlet, No. 4.

H.M.S.O. *The Future of Secondary Schools in Wales*. Report of the General Advisory Council (Wales), 1949.

JAMES, C. "Bilingualism and Non-Verbal Reasoning." *Bulletin No.* 5, Univ. Coll. Fac. of Ed., Aberystwyth, 1958.

JAMES, C. "A Comparative Study of General Performance between Bilingual and Monoglot Children in South Wales." Unpublished B.Ed. Thesis, Univ. of Edinburgh, 1947.

JONES, I. *A Review of Problems of Research into Bilingualism and Allied Topics*. Pamphlet No. 1, Univ. Coll. Fac. of Ed., Aberystwyth, 1953.

JONES, W. R. "The Language Handicap of Welsh-Speaking Children: A study of their performance." *Brit. Journ. Ed. Psych.*, Vol. XXII, Part II, June 1952.

JONES, W. R. *Bilingualism and Intelligence*. University of Wales Press, 1959.

JONES, W. R., MORRISON, J., ROGERS, J., and SAER, H. *The Educational Attainment of Bilingual Children in relation to their Intelligence and Linguistic Background*. Univ. of Wales Press, 1957.

LEOPOLD, W. F. *Speech Development of a Bilingual Child: a linguistic record*. Chicago, 1939.

LIEBENBURG, D. J. "Report on Bilingual Administration"—The Public Dept. of Ed., Cape Town. *Bulletin No.* 4, Coll. Fac. of Ed., Aberystwyth.

MORRISON, J. R. "Bilingualism: some Psychological Aspects." Paper read to the *Brit. Assoc. for Advancement of Science*, No. 56, March 1958.

O'DOHERTY, E. F. "Bilingualism: Educational Aspects." Paper read to the *British Assoc. for the Advancement of Science*, No. 56, March 1958.

O'DOMHNALLAIN, T. "Bilingualism in Ireland." *Bulletin No.* 6, Coll. Fac. of Ed., Aberystwyth.

PENFIELD, W. Address to the American Academy of Arts and Science in February, 1953.

PENFIELD, W. *The Excitable Cortex in Conscious Man*. Sherrington Lectures, Liverpool Univ. Press, 1958.

PIAGET, J. "Perception et Intelligence." *Bulletin* du Groupes d'Etudes de Psychologie de l'Université de Paris, 1950.

PINSENT, A. *The Construction and Use of Standardised Tests of Intelligence and Attainment*. Pamphlet No. 3, Univ. Coll. Wales Fac. of Ed., 1954.

REES, G. *A Welsh Linguistic Background Scale*. Pamphlet No. 2, Univ. Coll. Wales Fac. of Ed. Aberstwyth.

SAER, D. J. "Psychological Problems of Bilingualism." An address written for the International Conference of Bilingualism at Luxemburg, organised by the Bureau International d'Education, and published in *The Welsh Outlook*, Vol. XV, Nos. 5 and 6, 1928.

SAER, H. and SMELTEN, N. "Bilingual Education in Belgium." *Bulletin No.* 5, Coll. Fac. of Ed., Aberystwyth.

SIMMONS, E., WILLIAMS, U., MORGAN, G. A. V., and PEAKER, G. F. *Report of the North Wales Child Guidance Clinics for the year ending 31st December*, 1957.

THOMAS, B. B. "An Administrator's Approach to the Implementation of Bilingual Policy." Paper delivered to the *Brit. Assoc. for the Adv. of Science*, 9th September, 1957.

THOMPSON, G. H. "Instinct, Intelligence and Character," pub. Allen & Unwin, 1949

THOMAS, J. *Third Language Survey of Caernarvonshire Schools*. Gilym Evans, Caernarvon, 1952.

WILLIAMS, J. L. "Y Ddwy Iaith Yn Yr Ysgol," Argraffwyd o'r Faner. *Hydref* 24, 1957.

WILLIAMS, J. L. "The National Language in the Social Pattern of Wales." From Dec. *Studies*, Autumn, 1958. "The Bilingual Game." *The Welsh Anvil*, 1958.

YATES, A. and PIDGEON, D. A. *Admission to Grammar Schools*. Third Interim Report on the allocation of Primary School-leavers to Courses of Secondary Education. Published for the National Foundation for Educational Research by Newnes Ed. Pub. Co., 1958.

Research Note:

IMPROVING TEST VALIDITY BY COACHING

by GINA R. ORTAR

(*School of Education, The Hebrew University, Jerusalem*)

Introductory Remarks—ALFRED YATES

The following article has been contributed by a distinguished educational psychologist from the Hebrew University, Jerusalem, who has been visiting this country for the past few months and has spent a considerable portion of her stay working at the Foundation.

Dr. Ortar's proposals for the construction and development of tests which incorporate a period of coaching and which attempt to assess the child's capacity to profit from instruction are worth examining closely. There must be many situations in which a reliable assessment of a person's ability to absorb new knowledge or to acquire fresh cognitive skills would be as useful or possibly even more useful than evaluation of his previously acquired abilities and attainments which must obviously depend, to some extent, on the kind of experience he has enjoyed and on the quality of the instruction he has received. The kind of test which Dr. Ortar describes could have many useful applications both in educational and in vocational guidance.

In the circumstances in which Dr. Ortar's test has been used, it was clearly necessary to depart from normal testing practices, since she was confronted with children from many different countries with markedly different social and cultural backgrounds. Although no-one would deny that there are differences of this kind to be found within a random sample of children in our own country, they are, of course, relatively insignificant compared with the kind of variation with which Dr. Ortar was dealing. It is possible, therefore, that the results she obtained would not be duplicated if a similar experiment were tried here.

During the course of her article she draws a comparison which may well be misleading to readers in this country. She demonstrates that, in her experiment, the scores obtained by children after they had been coached corresponded more closely with teachers' assessments of their pupils' abilities than did the children's initial scores. She then discusses the kind of coaching and practice that often precede the eleven-plus examination in this country and may perhaps convey the impression to some that such coaching should be encouraged as a means of improving the validity of our procedures for selecting pupils for grammar schools. The situation of her own work as she describes it is, of course, totally different from that which confronts a local education authority in this country. She is concerned with the problem of assessing the abilities of children who speak different languages and who have been brought up in a variety of cultures. Those local authorities in this country which approve or promote a certain amount of coaching for, or practice in, objective tests prior to the eleven-plus examination are not seeking to enable educationally deprived children to compete on equal terms with those who have enjoyed vastly superior schooling. They are merely endeavouring to ensure that all children are acquainted with the particular form of examination that has been devised for them. The vast majority of children concerned have had sufficient educational opportunities to enable them to reveal their " true " ability in tests of the conventional type.

This caveat is not intended to detract in any way from the value and importance of Dr. Ortar's research. If the kind of test she outlines can be satisfactorily developed it may well serve a number of useful purposes.

THE level of attainment of a group or an individual can be measured by a variety of more or less objective techniques. The best-known among them being school marks and standardised attainment tests. These methods of evaluating the present level of attainment are frequently used also for predicting future achievement and for this purpose various types of intelligence tests are usually added.

Although these tests are considerably correlated among themselves, and therefore to some extent measure the same abilities and attainments, each of them measures also some additional factors and its predictive or diagnostic power depends on the extent to which these factors are related to the criterion.

When the criterion is future success in school, an improvement in validity of objective tests is best achieved by adding suitably weighted school marks, or scaled teachers' estimates. It is generally supposed that such measures of school attainment reflect to a considerable degree certain personality variables which may have accounted for failure or success in school in the past and will do so again in the future. Owing to these factors the actual achievement in school is, in the case of some children, different from the level that would be expected on the evidence of objective tests alone.

Most of the existing objective tests are composed of items which sample a child's behaviour at the precise moment of testing. The score on these tests is the outcome of the subject's total experience which in turn is a result of interaction between his inborn (but unmeasurable) intelligence, his general environment and his special knowledge in the subject-matter tapped by the test, and last but not least, his " test-sophistication."

If it could be assumed that all but the inborn factors were equal for all subjects, the test scores obtained could be considered as representing the subject's " true " ability. This measure could probably be used at the same time for prediction and " postdiction," its use in prediction depending, of course, on the assumption that the children's environment and training will remain equal.

Such an assumption of past equality in experience is rarely, if ever, justified and, in consequence, the measures are less valid than they would be, if at least a better approximation to equality could be achieved. Many research workers, working with subjects whose previous experiences were obviously different from those for whom the test was designed, have tried to lessen the weight of this factor by letting the subjects repeat the test several times, with or without help and explanations. (*See references* 1, 2, 3, 6, 7 *on Page* 142.) This technique was applied when there were clear differences in cultural patterns (3, 6), social class (1) and intelligence (2, 7). In all instances, as a consequence of simple re-test, a practice period, coaching or added incentive, the final scores tended to be higher than the initial scores and to be correlated more highly with the criterion (8).

Such general improvement is probably due to a number of factors. The more obvious of these are:

(1) better understanding of the principles underlying the test. Reasoning based on general principles is often alien to some of the subjects either because it had not been demanded of them at all (cultural pattern), or because it was not absorbed when taught (social class influence);

(2) discovery of errors in reasoning committed on particular items;

(3) more positive approach to the familiar task.

The ways of adding incentive, coaching, training or repeating the test have not yet in themselves served as subjects of research; the meaning of these terms as used in the literature is ambiguous and they are sometimes used interchangeably. Consequently, not much is known about the best way to impart to the testee the necessary experience. It is quite probable that this process will prove not to be amenable to standardisation, being dependent on the subject's degree of previous acquaintance with the task.

Differences in the amount and kind of training given by the investigators and different methods of treating the data have resulted in conclusions which cannot be easily compared. It seems, however, that generally the verbal tests have been least susceptible to all kinds of training, but the scores even on these tend to increase with practice or coaching. In the few instances when the correlation of initial and final scores with an outside criterion (teachers' judgment or school record) was computed, it was found that, on the whole, the final scores had higher validity coefficients. To this end some optimal amount of practice seems to be essential; too much of it probably tends to increase the influence of purely formal factors or of boredom and so to reduce the validity as compared to the first testing (5).

Thus, there seems to exist a justification, on theoretical as well as on practical grounds, for a technique which is directly aimed at equalising the experience of all the subjects who are to be tested and assessed. It is now accepted that valid results cannot be achieved by devising a task which is equally unfamiliar to all the testees. The condition of equality must, therefore, be achieved by attempting to make the principles of a given task equally well perceived and understood by everybody taking the test. The necessary supplementary experience must be provided in a way that takes into account the subject's present level of reasoning ability and which develops it in the direction needed for the given problem. This can hardly be done by means of simple repetition; a period of explanation, trial on the subject's part and possibly even individual instruction should be introduced. The resulting behaviour may be thought of as reflecting the subject's ability to profit from instruction (past or recent), it may then be measured and the test validated by comparison with some external criterion of learned behaviour.

The measure of this ability, e.g. the final score, should remain wholly independent of any gain made during the instruction period as this would reintroduce the influence of unequal previous experience. This differentiation between the past and the recent experience would as a matter of fact be immaterial in most life-situations. A teacher in school, an instructor in handicrafts, or an employer want most of all to be told how much a subject is able to learn when given a fair amount of instruction. They are often aware that the amount of teaching needed by different subjects varies, within certain practical limits, but this factor tends, on the whole, to be disregarded after the completion of training, when the final success is assessed. The proposed way of testing is, therefore, a technique midway between the usual type of test and a trial period which is often impracticable and sometimes clearly impossible.

The experiment in measuring " educability " stems from various, mostly unsuccessful, attempts on the part of the writer and her co-workers to assess the " learning potential "

of new immigrants to Israel in the early 'fifties. The subjects, mostly children of primary school age, came from oriental countries and many of them had never been to school. No attainment test seemed, therefore, to do them justice and as a rule, the adapted Wechsler Intelligence Scale for Children (WISC) was used. After a time, it became obvious, that contrary to the expectations, the verbal part of the WISC, despite its difficulty, was a much more valid predictor of the children's progress in school than the performance part, which, moreover, was comparatively even more difficult. Discussions with the subjects and the testers led the writer to the belief that the failure of the performance part of the test to distinguish between the more or less able children was due chiefly to their insufficient understanding of the essential principles underlying the test. The meagre success was as often as not achieved through relying on some external clues, irrelevant to the general problem posed in the test. It was then decided to try and set up a new device that could predict the learning potential of children who had been brought up in different cultures. All the existing " international " or " inter-cultural " scales seemed to depend on the subject's ability to " educe " for himself right from the start the general principle involved —an ability which is surely not identical with whatever is needed for successful learning in school or learning a trade. In these situations the principle or the " laws " are, for the most part, explained and all an average child is required to do is to follow them. The instances in which he is compelled to seek new ways of dealing with a problem are rare indeed, if the so-called " creative " parts of a task are excepted.

This reasoning seemed to apply to everybody and not only to the immigrant child, and consequently a task was sought which should be relatively unfamiliar to most and at the same time suitable for instruction and explanation " on the spot." All verbal and most of the numerical tests seemed inappropriate since a child's ability to deal with tests of this kind depends largely on the kind of background he has enjoyed and the amount of instruction he has received. Conversely, as failure on the WISC (and other performance tests) indicated, a performance task seemed to answer the requirements. We assumed it to be scarcely familiar to the children both as a material and as a medium for abstract thought and therefore suited as a measure of their ability to apply learned principles of behaviour. The task finally chosen was that of constructing a pattern out of superimposed " stencils." It is somewhat similar to the " Stencil Test " of G. Arthur, although the form of the stencils and the manner of administration are very different.

The test consists of three parts. The first one is given and scored like any other test. The scores may be later compared with the final success, although they are not in any way used for computing the gain or the final score. It is conceivable however, that the comparison between the initial and the final scores may be useful as a measure of cultural or social-class differences. It may also prove fruitful as a clinical instrument.

In the second part of the test a considerable number of specially chosen and graded items is administered. The subject has the opportunity to try and solve them on his own but if he fails (through producing a false solution, abandoning the task or getting " stuck ") the examiner explains to him the principles involved, using, as far as possible, the subject's own method of approach and a suitable degree of abstraction. The failed items of the first part are also discussed in order to establish a maximum similarity of experience previous to the administration of the final part. (The practice is to be interrupted if a

certain number of graded items is failed, e.g. if it is obvious that the subject will not profit from further explanations.)

The third part of the test is again administered in the usual manner, apart from the fact that the coaching period makes any examples superfluous. The items of this part are new and towards the end much more difficult than in the coaching period, but no entirely new approach or principle is involved.

The test was standardised on a small but probably representative sample of Israeli children (N = 397) aged from 6 to 14 and the norms were extended by extrapolation for 11 months at each end. Subsequently, it was given in some other schools and the table summarising the validities is given below. The scores were computed in deviation I.Q.'s and correlated with the teacher's judgment on the academic as well as on the practical (handwork) subjects.†

TABLE I

Correlation between teachers' marks and scores on the first and the final parts of the Triangles Test

TRIANGLES TEST	TEACHERS' MARKS					
	Academic subjects				*Practical subjects*	
	Schools				Schools	
	A N=62	B N=57	C N=100	D N=87	A N=31	B N=56
First part ..	.246	.276		.234	.273	.09
Final part ..	.535	.335	.524	.402	.470	.198

The substantial increase in validity which follows the period of instruction is seen clearly from the table.

The Triangle Test in its present form and according to its norms is probably valid only for Israel, but the general principle of a test in which a coaching period precedes the actual measure of success can be profitably adapted for individual or even group testing, especially when subjects with different social or cultural backgrounds are to be tested and their probable success in a given line of education is to be assessed.

As long ago as 1935, Otto Selz published a paper on " Experiments for Improving the Level of Intelligence " in which he advocated the use of various tests, verbal and non-verbal, as means of improving the pupils' ways of dealing with abstract problems.

†Reliability of the final part (split half *r*, uncorrected for length, age held constant) was $r = .924$.
Correlation with Wechsler Children Scale (Verbal part) resulted in :
$r = .408$ (first part, before coaching)
$r = .487$ (final score, after coaching).

On the evidence of experiments conducted by his students he claims that this instruction in solving problems really raised the level of intelligence in some classes of slow learning children. In the light of our present knowledge, it is hard to share Selz's optimism, but his technique of explanations and exercises in class preceding the final test could be tried out for the development of a group test measuring learning potential.

More recently many British research workers have been concerned with the " coachability " of different kinds of tests. Whenever the validity was considered and computed, their results clearly indicate its increase after optimal coaching. If no testing (and especially in regard to the 11-plus) were to be done except after a suitable coaching period, some of the shortcomings accepted as inevitable (and connected in the main with coaching and social-class differences) might perhaps be avoided and both the reliability and the validity increased.

The main drawback of coached testing would be the increased duration of the testing period. This, however, need not be excessive. Another difficulty, if attempts were made to employ this technique on a large scale, would be the need for a large body of carefully trained people to administer the tests and to provide the necessary coaching effectively.

According to the results of research, verbal tests are less susceptible to coaching than non-verbal or performance ones, probably because the school has already provided the necessary training in many of the language skills.* The most suitable medium (whether words, pictures, abstract drawings, symbols, models or real objects) to be used will depend on the purpose of the test and the general conditions to be fulfilled. It will probably have to be decided empirically with reference to the criterion used for estimating the validity.

Bibliography

1. Haggard, E. A. " Social Status and Intelligence, an experimental study of certain cultural determinants of measured intelligence." *Gent. Psych. Monog.*, 49, 1954.
2. Heim, A. " The effects of repeatedly retesting the same group on the same intelligence test." *Quart. of Exp. Psych.*, 1, 1949; 2, 1950.
3. Jahoda, G. " Assessment of abstract behaviour in a non-western culture." *J. of Abn. and Soc. Psych.*, 1954.
4. Morgan, G. A. V. *A Study of Verbal Abilities.* Unpublished Ph.D. Thesis, University of London, 1953.
5. Navathe, D. V. *The Influence of the Form of Items on Intelligence Test Scores and its susceptibility to practice.*" Unpubl. Ph.D. Thesis, University of London, 1953.
6. Ombredane, A. " Principe pour une étude psychologique des noirs du Congo Belge." *Anné Psychologique*, 1951.
7. Selz, O. " Versuche zur Hebung des Intelligenzniveaus." *Zeitschr. fuer Psych.*, 134, 1935.
8. Woodrow, E. " Factors in improvement with practice." *J. of Psych.*, 7, 1939.

*This might be part of the explanation of the seemingly strange fact that verbal tests are more valid predictors than non-verbal ones for many training courses and occupations of a practical kind.

Research Note:

SELECTION FOR SECONDARY TECHNICAL COURSES – A REPORT OF A PILOT INVESTIGATION

ALFRED YATES and FRANK BARR

A CONSIDERABLE amount of research has been devoted to the problems involved in allocating primary school-leavers to suitable courses of secondary education. The vast bulk of it, however, has been concentrated on the selection of pupils for grammar schools and relatively few schemes of selection for secondary technical schools have been reported.

For example, one type of selection procedure has been proposed which involves the administration of a battery of tests to all candidates applying for entrance to grammar and technical schools. For each candidate two lists of scores are compiled giving respectively a grammar and technical school aggregate. The two aggregate scores are then plotted on a graph—the data, of course, being expressed in similar units, for example I.Q.'s with a mean of 100 and a standard deviation of 15 points. On each axis of the graph two marks are made, the upper one cutting off candidates who are clearly acceptable, the lower indicating those who definitely cannot be offered places, with the area between forming a border-zone of doubtful cases. The level of the marks is determined by the number of places which are available in each type of school.

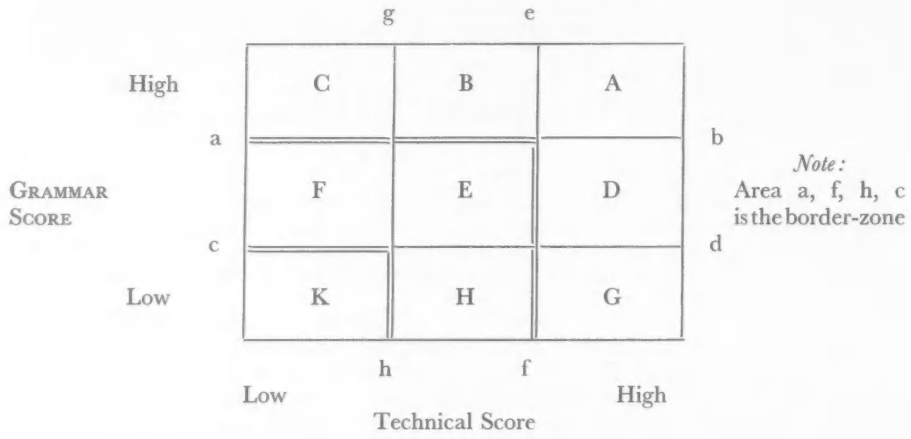
The scores used in this way by Lambert and Peel were derived from Moray House tests of general ability, attainment in English and Arithmetic, " practical " performance and " paper and pencil " tests, and their own General Information test which yields " practical " and " academic " scores. A suggestion made by Alexander was also incorporated into the procedure. This involved plotting not the total scores but the difference between practical and verbal ability aggregate scores. Where a difference of 10 or more points occurs candidates are offered places in the appropriate course, with the reservation that technical school entrants must achieve a minimum score of 100 points on the verbal ability tests.

A similar method was adopted by Wiseman and Fitzpatrick. Scores of general ability, English and Arithmetic formed the core of both the grammar and technical school test arrays, the former being completed by an English Essay and the " academic " score of the investigators' *Devon Interest Test*, and the latter by the interest test's " practical " score and a spatial test. The two aggregate scores for each candidate were graphed; parents' preferences and teachers' recommendations were also recorded.

DIAGRAM

METHOD OF PLOTTING " GRAMMAR " AND " TECHNICAL " SCORE

(Source—Manual to Devon Interest Test)



The situation is represented by the diagram. Children who have high technical and grammar school scores (A) are offered the choice of taking a place in either school. However, high technical school scorers who have medium (D) or low grammar school totals (G) are offered only a technical school place; if this is refused then those with (D) for grammar school are transferred to a border-zone grammar school group (F), whilst those with (G) are not considered any more for either school and are placed at (K). Similarly, high grammar school scorers with medium (B) or low (C) technical school totals are offered grammar school places a refusal of which involves either transfer to border-zone technical school candidates (H), or forfeiture of further consideration for a place (K). Border-zone candidates are then admitted according to the number of school places which remain.

Unfortunately, little use has been made of these schemes and available evidence about their effectiveness for selection for technical courses is slight. The pilot investigation reported in this note was designed to yield some useful information, mainly about the predictive value of various tests. It was carried out with the co-operation of the Wallasey Education Authority.

Some of the tests used were employed by the Authority as part of its procedure for allocating children at the age of eleven either to grammar schools or to the two secondary technical schools in the Borough (one for girls, and one for boys). The other tests were administered by the Foundation specifically for the purposes of the inquiry.

The sample

The children concerned in this investigation were the boys and girls who entered the Authority's secondary technical schools in September, 1954. It is, of course, rarely possible to preserve a sample intact throughout the course of a follow-up study and the results discussed in this report are related to 94 of these children (42 boys and 52 girls) whose progress has been followed up to the end of the fourth year of their course, and for whom it has been possible to collect a full array of test scores.

The tests

The following tests were administered by the Authority before the children left their primary schools:

Moray House Verbal Reasoning
Moray House English
Moray House Arithmetic

At the outset of their secondary technical school course the children in the sample were set the following additional tests:

N.F.E.R. Non-Verbal Test 3
N.F.E.R. Spatial Test II
Watts' Group Performance Test
N.F.E.R. Clerical Test I
The Lambert-Peel General Information Test
The Devon Interest Test

The Devon Interest test has separate versions for boys and girls whilst the Lambert-Peel General Information test is designed for boys only.

This battery of tests was designed to obtain measures of skills that may well be relevant in secondary technical courses, but which are not assessed by means of the conventional tests of verbal reasoning, English, and arithmetic. The non-verbal and spatial tests attempt to measure perceptual skills and powers of inductive and deductive reasoning applied to shapes, designs and patterns. The General Information and Interest tests provide an indication of the bias of children's interests towards either academic or more practical pursuits.

The General Information test and the Devon Interest test were repeated in 1956 during the first term of the third year of the secondary school course.

The Criterion

The Heads and staffs of the two secondary technical schools were asked to keep records of the children's progress and, at the end of the fourth year of the course, to arrange them in rank order on the basis of their suitability for the courses which the schools provide. This order was based, in the main, in the cumulative results derived from the school's examinations, but since, after the second year in the boys' school and after the third year in the girls' school, alternative courses are provided, the Heads were required to carry out the difficult task of assessing and comparing the progress of children who had pursued different curricula.

The curricula and courses available

(a) Boys

For the first two years the boys followed a general course comprising English, History, Physics, Chemistry, Technical Drawing, Mathematics, Art, Spanish, Religious Instruction and Music. Rather more time is devoted to Physics, Chemistry and Mathematics than in the average grammar school course at this stage and these subjects are taught with a practical, rather than a theoretical bias.

At the beginning of the third year the boys are allocated either to a course leading to the General Certificate of Education at Ordinary level with a slight bias towards Engineering, or a General Certificate of Education course with a slight bias towards Architecture. The bias is slight in that all the boys continue with the general subjects listed above, the Engineers taking, in addition, three periods of Geography, two periods of Engineering and two periods of Metal Work, and the Architects take three periods of Surveying, two periods of Woodwork and two periods of Building Construction.

(b) Girls

For the first three years the girls follow a general course which is similar to that taken in any grammar school. The course includes one Foreign Language, two Sciences, Art, Cookery and Needlework.

In the fourth and fifth years the girls are allocated either to a commercial course or a practical course.

The commercial course comprises English Literature, English Language, Economic and Public Affairs, Geography, French, Mathematics, Commerce, Principles of Accounts, Shorthand, Typewriting and one practical subject (Art, Needlework or Cookery).

The practical course involves English Language, English Literature, French, Biology, Chemistry, Mathematics, History, Geography and two practical subjects (Art, Needlework or Cookery).

Within each course there are two grades or streams, the girls in the higher grade offering five or more subjects in the G.C.E. " O " level examination, those in the lower grade offering fewer subjects at this level and others for the Royal Society of Arts examinations.

Analysis of the results

The predictive value of the tests

The results for the boys and girls were analysed separately.

Boys

A comparison between the results of the tests administered in 1954 and the order of merit provided four years later by the teachers showed that the best prediction was offered by the N.F.E.R. Spatial Test II (r=0.4122). The practical score on the Lambert-Peel General Information test also correlated significantly with the criterion (r=0.3044); but neither this nor any of the other tests, when added to N.F.E.R. Spatial Test II, increased the level of prediction provided by the latter.

Girls

The analysis of the girls' test results revealed only one significant correlation with the criterion—that of the Moray House Arithmetic Test ($r = 0.2774$).

The prediction afforded by this test was not increased significantly by the addition of any of the other tests.

The interest tests

The Lambert-Peel General Information Test and the Devon Interest Test were administered twice, in 1954 and again in 1956. The purpose of this repetition was to examine the extent to which the bias of the children's interests was affected by their experience of a secondary technical school.

The analysis of the results showed that in almost every respect the boys' scores differed from those of the girls. In the practical section of each test the boys' average score was higher than that of the girls. There was an even more striking difference between the sexes when the 1954 and 1956 results were compared. The girls' scores in the practical section of the tests—their bias, that is, towards practical or technical interests —did not change significantly. The boys' scores, on the other hand, showed a marked increase.

Discussion of the results and conclusions

The predictive value of the tests

The sample of children studied was very small and this investigation can only, therefore, be regarded as a pilot study yielding suggestive rather than conclusive results. Two of the findings, however, since they serve to confirm the results of other similar inquiries, are deserving of comment.

It is first of all clear that the conventional battery of tests—Verbal Reasoning, English and Arithmetic—can bear a considerable part of the burden of predicting success in secondary technical courses. The worth of these tests as predictors of success in grammar schools has been amply proved. It is clear that there is a sufficient correspondence between the abilities and qualities required for success in the two types of course for this battery to be affective also for selecting candidates for secondary technical schools. Indeed, the results of this inquiry suggest that the Authority's present procedure of relying on evidence yielded by these tests, together with the assessments provided by primary school teachers and the preferences expressed by the children's parents is a satisfactory one. There is no evidence from the results obtained from this investigation to suggest that any of the additional tests administered for experimental purposes could add to the predictive value of the Authority's present procedure as far as the girls are concerned.

The results indicate, however, that for the boys the inclusion of a test of spatial ability adds to the predictive value of the battery. It has been found previously*, of course, that such a test helps also to predict success in a grammar school course. No doubt, the skills that are measured by this test are brought into play in subjects such as the

*_Admission to Grammar Schools._ Yates and Pidgeon. Newnes Educational Publishing Co., London, 1958.

natural sciences and some branches of mathematics—which are common to grammar and technical schools—and in technical drawing. The emphasis placed in the boys' secondary technical school on science and mathematics and, particularly, the fact that these subjects are taught with a practical bias, together with the inclusion of technical drawing in the syllabus probably explain why, in the results obtained from this inquiry, the spatial test was found to be a useful predictor for boys but not for girls.

The interest tests

The most striking result of the comparison between the results of the interest tests in 1954 and 1956 is the increase in the boys' practical scores. This suggests that the secondary school course they have followed has markedly affected the bias of their interests. It would be interesting to repeat this inquiry in a grammar school to test the reasonable hypothesis that experience of an academic course might similarly increase the scores in the academic sections of the test.

The girls did not manifest a similar increase. The reason for this difference may well be due to the differences in the curricula of the two schools. For three years the girls follow a course which is described as " similar to that taken in a grammar school." The undifferentiated course is one year shorter for the boys and comprises, from the outset, an emphasis on the practical aspects of science and mathematics and these subjects have as a result, a marked vocational " bite."

It would be fair, therefore, to describe the boys' course as more specifically " technical " than that provided for the girls—in the early stages at least—and this distinction probably accounts for the difference in the result of the interest tests.

Bibliography

ALEXANDER, W. P. " Selection of pupils for different types of Secondary Schools." *B. J. Ed. P.*, 1947, 17, pp. 123-30.

BRADFORD, E. J. G. " Selection for Technical Education," Part I. *B. J. Ed. P.*, 1946, 16, pp. 20-31.

BRADFORD, E. J. G. " Selection for Technical Education," Part II. *B. J. Ed. P.*, 1946, 16, pp. 69-81.

LAMBERT, C. M. " A Survey of Ability and Interest at the stage of transfer." *B. J. Ed. P.*, 1949, 19, pp. 67-81.

PEEL, E. A. " Assessment of Interest in Practical Topics." *B. J. Ed. P.*, 1948, 18, pp. 41-47.

PEEL, E. A. " Symposium on the selection of pupils for different types of schools, VI. Evidence of a Practical Factor at the age of 11." *B. J. Ed. P.*, 1949, 19, pp. 1-15.

WIEGERSMA, S. and BARR, F. " Educational Guidance—II: Interesting Testing in Educational and Vocational Guidance." *Educational Research*, 1959, Vol. II, No. 1, pp. 39-64.

WISEMAN, S. and FITZPATRICK, T. F. " An interest test for use in selection for technical education." *B. J. Ed. P.*, 1954, 24, pp. 99-105.

WISEMAN, S. and FITZPATRICK, T. F. *Manual of the Devon Interest Test.* London: Oliver & Boyd, 1954.

Abstract:

"AN EXAMINATION OF SOME PSYCHOLOGICAL EFFECTS OF TEACHING ENGLISH IN SCHOOLS"

Summary of M.A. Thesis submitted for approval, December, 1959, University of London

MURIEL M. KAY

Statement of problem

THE operational research described in this thesis was undertaken in order to explore some of the psychological implications of the English lesson, with particular relevance to the fostering of personal development and the growth of human relations. It was based on the following premises: (*a*) that work in English is primarily and essentially concerned with language; (*b*) that language is intimately related to the psychological processes of interaction, communication, and the development of the Self; (*c*) that communication in language occurs through the media of speaking, reading, writing and listening; these being fundamental activities in all English lessons; and (*d*) that, within the teaching situation, the quality and nature of the personal relationship established between teacher and taught will have an important bearing on the quality and nature of the resultant communication taking place between the persons in the group.

Sample

The work was undertaken with 73 adolescent grammar school girls, whose chronological ages ranged from 15.0 to 18.6. The majority of these consisted of the members of the three Fifth Forms in the school; there was, in addition, a small group of Sixth Form girls. All were following the normal course of study towards the G.C.E. examination, at "O" or "A" level, in English Language and English Literature. The investigator herself performed a dual function: that of teacher and that of research-worker.

Method

It was decided at the outset of the project that, owing to the special educational needs of the girls concerned, as well as the environmental circumstances in which the work took place, no modifications of normal teaching procedure could or should be made; and that the research material should be obtained through the two channels of: (*a*) the written, and (*b*) the spoken, word.

The first year of the enterprise was occupied largely with the work as a full-time practising teacher; during the course of this, there also proceeded the collection of relevant research material. The work was, perforce, undertaken within the limits set by the University examination syllabus; nevertheless, where choice of texts was possible, the

selection was made on the grounds of the girls' known abilities, needs, and interests. In the teaching approach, emphasis was placed less on literary criticism and detailed study of style and technique; and much more on the elucidation of meaning, on a study of character and motive, on the provision of opportunities for understanding the emotional significance of the work studied, for expression of the girls' subjective responses, and for further explorations of the writer's theme. Similarly, in the written work undertaken by the girls, the choice of essay-subjects was influenced largely by their own voiced wishes, preferences, and observed lines of development. The chief overall aim throughout the year's teaching was to enable the girls, through their speaking, reading, writing and listening activities, to clarify, strengthen, and enrich their own experience, as well as to broaden and deepen their relations with others.

By the close of this first year, two kinds of material had been collected: (*a*) the *spoken* contributions of the small Sixth Form group, in 101 meetings from October to June, had been recorded; (*b*) *written* contributions had been obtained from all 73 girls, in the form of five essays on the subjects of: Myself; People; The Person I would most like to be, and the Person I would most like to meet; Two Character Sketches; Three Wishes.

Analysis of data

This material was subsequently treated thus. Analyses were made of: (*a*) *the social interaction* in the Sixth Form group, using techniques similar to those described by Robert Bales in " Interaction Process Analysis "; (*b*) *the subject-matter of discussion* within this group; (*c*) *the content of the essay material*. These analyses ultimately produced evidence which was, on the one hand, *quantitative:* here, a series of charts and tables was constructed through the analysis of social interaction and of essay material; and, on the other hand, *topical:* here, information was obtained, from spoken and written contributions, regarding the meaningful areas of experience for the total group, as well as individual differences of response thereto. With particular regard to the essay material, this was finally found to be summarisable under the following heads: (*a*) The adolescent and physical characteristics; (*b*) The adolescent and social relationships; (*c*) The adolescent and school; (*d*) The adolescent and vocational concerns; (*e*) Adolescent leisure-interests; (*f*) Adolescent wishes; (*g*) The adolescent and the search for values; (*h*) The adolescent and personality development.

Results

On the basis of the total evidence thus compiled, the following psychological effects of English teaching were adjudged to have resulted.

A. Developmental

1. *A clarification and enhancement of the self-picture.* Through their participation in the language activities of speaking and writing, these girls had been enabled to embark on a graduated process of self-discovery, self-knowledge and self-acceptance.

2. *A stimulus towards personal growth*, in the progressive achievement of developmental tasks.
3. *Improvement in social relations*, both between teacher and taught, and within the peer-groups. Evidence from the interaction analysis showed: (*a*) an increase in the amount of interaction; (*b*) a growth in group solidarity; (*c*) a decline in the expression of negative feeling. Moreover, the essay material provided evidence of a high degree of sincerity, freedom and spontaneity, which was considered a further indication of productive social relationships.

B. THERAPEUTIC

1. *Reduction in anxiety and tension.* This was most clearly documented in the interaction analysis; analysis of subject-matter also revealed the taking of opportunities for the expression of fears, aggressions and antagonisms.
2. *The opening of new channels of communication between adult and adolescent.* Spoken and written records showed that two-way communication progressively improved, in quantity and quality.
3. *The exploration of personal problems* in a group situation was considered somewhat analogous to work done in group psychotherapy.
4. *Opportunities for emotional release*, through contact with literature, and through personal writing. Both positive and negative emotions were expressed; at an affective and at a cognitive level.

Finally, the project was considered to be additionally contributory to: (*a*) a further understanding of adolescents; (*b*) a more insightful treatment of individuals; (*c*) the mental health and growth of the teacher.

Thesis Abstract:

AN ENQUIRY INTO FACTORS ACCOMPANYING SECONDARY SCHOOL PUPILS' INTEREST IN SCIENCE

Summary of a Thesis presented for the degree of Doctor of Philosophy in the University of London, June, 1959

GEORGE R. MEYER

(i) Introduction

The motive of the enquiry was the belief that one of the primary aims of general education is the developlent of genuine interest in science among all citizens; and that clearer understanding of the concomitants of science interest could assist in that development.

The study was concerned with a description of the significance and strength of the relationships between science interest and factors considered by educationalists and psychologists to be causally related to it.

(ii) Methods

The subjects were a group of 150 secondary pupils aged from twelve to fifteen years in a mixed bilateral (technical and modern) school near London. The pupils were intensively tested, interviewed and observed over a period of ten weeks.

Three aspects of science interest were measured by interest inventories scored by absolute summated rating. These aspects were : interest in scientifically biased leisure activities; interest in the scientific method; and interest in topics most frequently occurring in school general science courses. Each test was found to be reliable and valid and the three were combined into a single battery which was used to obtain a science interest score for each of the 150 pupils in the study. Validation of the battery was obtained by correlating its scores with those from related tests[1], by checking its ability to discriminate between groups with known characteristics[2], by correlating it with essay and interview data and with graphic ratings by self, friend and teacher.

Instruments were developed to measure the fifty variables, suspected by a panel of psychologists and educationalists to be related to science interest. These instruments included ranking and rating scales, opinion polls, attitude tests, interest inventories, essays, interviews, sociometric tests and observational techniques. All were found to be reliable and sufficiently valid for the purposes of the enquiry. Most data were collected by group tests but some were from the study of three individual cases.

[1]Related tests included those developed to estimate interest in and attitude towards science in general and as a school subject.

[2]These included pupil groups with science and non-science vocational bias, and with science and non-science school subject preference.

(iii) Results

A number of sociological and educational factors was found to be related to science interest.

There was a considerable sex difference, boys being much more in favour of science than girls. There appeared to be a slight but significant decline in interest with age as the pupils approached the statutory school leaving age but as the sample was perhaps biased towards pupils who would be likely to leave school early, any generalization on this finding would be unwarranted. The science interest scores of pupils who wanted to leave school at either fifteen or sixteen years of age were significantly lower than those who wanted to leave at seventeen or eighteen, and there was a low but significant correlation between science interest and attitude to school. Yet there were no significant links between science interest and intelligence, ability in English and Arithmetic or attainment in the school science examination.

There was a significant correlation of moderate strength between interest and the degree of sophistication of a pupil's definition of science; and interest in various branches of science were found to be related to total science interest in the following rank order by strength of relationship—Physics, Geology, Chemistry, Astronomy, History of Science and Biology. Of the various methods available to a pupil for solving school science problems, interest in scientific method was most closely linked to total science interest followed by interest in consulting experts, in reading books, and finally, in asking teachers for the solution.

Studies of the relationship between total science interest and interest in various types of school subjects showed some contrasted trends. Interests in science type subjects were, of course, closely linked to total science interest, as were interests in mathematical subjects. It was perhaps unexpected though to find a moderately significant link between interest in science and English/History type subjects and yet an absence of a significant link with Practical/Craft subjects. Music/Art and Foreign Language subjects had no significant link with science interest and there was also a lack of correlation between science interest and interest in leisure activities with either literary or artistic bias.

Various studies of the relationships between pupils and their teachers, their friends and their parents, yielded some interesting results.

No significant link was found between interest in science and attitude to the science teacher but, rather surprisingly, there was a low but significant link with attitude to the English teacher, possibly because she was equated in the pupil's mind with the educational process as a whole. There were no significant links between the stated attitudes of either the science or English teachers towards their pupils and those pupils' measured interest in science. Attitudinal relationships, though, between pupils and their parents were highly significant, particularly the correlation of the interest scores with a pupil's appraisal of both his father's and his mother's interest in science. Correlations of a pupil's science interests with the stated scientific attitudes and interests of his parents were of only borderline significance. There was some evidence of a breakdown of communication between parent and child on either's attitudes to science, particularly in the cases of the pupils' mothers. Evidence from case studies suggested that the home probably exerted a dominant influence in the determination of the level of interest in science; especially

significant were the attitudinal relationships between parent and child and the extent of democratic, stable and co-operative behaviour in the home. The social status of the occupation of the father, however, seemed to be quite independent of his child's level of scientific interest, and there were no significant differences between the science interest scores of pupils whose mothers were employed and whose mothers remained full-time housewives.

Moderately high correlations were obtained between the science interest scores of pupils and their class-mates. Sociometric data indicated that pupils selecting one another for certain school activities shared common interests, but that the correlation between the science interest scores of accepting pairs was not necessarily higher for science-type activities than non-science-type activities. There were even low but significant links between the interest scores of mutually rejected members of a pair, suggesting that even enemies tended to be selected from a pool of pupils with somewhat similar interest levels.

Finally, data were assembled on the relationships between a pupil's level of scientific interest and the interest in and awareness of his informational background. Of some twenty-five possible sources of scientific information, only interest in those obviously related to science (such as doing experiments at home or school science activities) were related to science interest, with the exception of interest in visiting museums and in reading daily newspapers. Interests in such possible sources of information as television, radio, cinema, conversations with friends and parents, reading novels, books of non-fiction, weeklies or comics, and in various hobbies, club activities, or recreational games, were quite independent of interest in science. However, when pupils' estimates of the amount of scientific information obtained from these various possible sources were correlated with science interest scores, nearly all were found to be significantly linked; indicating that the higher the interest in science, the greater the amount of information likely to be obtained from the informational background even when exposure to this background was the same for pupils liking and disliking science.

(iv) Conclusion

While it was not possible to establish causal links between science interest and the various factors found to vary significantly with it, it *was* possible to make a series of tentative recommendations which should, if implemented, have cumulative effects on the increase of science interest among secondary pupils. These recommendations have been fully set out in the unpublished report.*

*The author owes much to his tutor, Dr. C. M. Fleming, whose careful guidance and encouragement were greatly appreciated. Mrs. A. P. Edwards Æenfold helped with information on statistical methods and I am most grateful to her. Grants were made available from special funds from the University of Sydney and the Australian Commonwealth,s Science and Industry Endowment Fund.—The Research Funds Committee of the University of London awarded a grant of thirty pounds. I acknowledge my indebtedness to these authorities.

GROUP TESTS OF READING READINESS

ELIZABETH J. STANDISH

THE following review of tests is not exhaustive but rather a survey of the current state of this field of research. The writer has tried to group together in a compact and abbreviated form those facts which are available and relevant about the actual material of the tests, followed by an evaluation of the research and methods used in their formulation. As with so many forms of measurement, refinement is proceeding all the time, and information can be quickly out of date. In view of this, the writer would be pleased to hear of additional information regarding these or any other such tests.

The following are all American tests, consequently they reflect considerable cultural differences from this country and should only be interpreted in the light of this. All the tests listed can be obtained from the N.F.E.R. test agency; delivery of those marked † may take up to two months. Copies of all of them may be consulted in the N.F.E.R. test library.

Some of the English publishers of reading schemes supply preparatory books which involve items similar to those used in reading readiness tests. *The Standard Reading Tests* by Daniels and Diack, for example, contain, amongst others, tests of copying abstract figures, copying a sentence, visual and aural discrimination, and letter recognition, but these are individual tests.

The National Foundation for Educational Research has started work on a battery of reading readiness tests for group administration, which it is hoped will be more closely related to the English background. First drafts of tests of auditory and visual discrimination are being tried out now.

1. † **American School Reading Readiness Test, Form D** (1955).

WILLIS E. PRATT, ROBERT V. YOUNG AND CARROLL WHITMER. Public School Publishing Co., Bloomington, Illinois.

Suitability: Grade 1 children (6-year-olds).
Content: Eight tests: vocabulary; discrimination of letter form by selection; discrimination of letter combinations recognition of words by selection; discrimination of letter combinations, recognition of words by selection; recognition of words by matching; discrimination of geometric form; following directions; memory of geometric forms.
Time: The test is not timed (approx. 45 minutes).
Suggested group size: 10-15.
A Manual is provided (copyright 1941, 1955).

The effectiveness of items was determined by selecting items from the Lee-Clarke *Reading Readiness Test*, the Clark—Alice and Jerry *Reading Readiness Test*, the *Metropolitan Readiness Test*, the *Monroe Reading Aptitude Test* and by using the Gates *Primary Reading Tests* administered at the end of the first half of the school year as the criterion of predictive efficiency. On the basis of the analysis of this data, the tests of auditory discrimination were omitted because of their dependence upon variations in administration, but sub-tests were included of: (1) visual discrimination of letters, of letter combinations or phonetic forms, word forms and geometric forms; (2) vocabulary-recognition of simple objects; (3) ability to copy simple geometric forms from memory; and (4) ability to follow directions.

Correlations for each of the eight sub-tests with the criterion test varied from .22 to .43 (kindergarten group) and from .17 to .46 (non-kindergarten group). Co-efficients of correlation ranging from .40 to .67 (kindergarten) and from .33 to .53 (non-kindergarten) were found between the *Detroit Beginning First Grade Intelligence Test* and the sub-tests.

The co-efficients of reliability are: .91± .004 for the half test (split half correlation), and .95± .004 for whole test (Spearman-Brown formula). No data is given on the reliability of the separate sub-tests, even though three tests contain only six items, and the largest number of items in any test is ten.

Norms have been established on 226 pupils from a larger group of 1,091 grade one children from small rural to large urban schools. Two sets of norms are given, since analyses of results of several reading readiness tests showed significant differences between kindergarten and non-kindergarten children although there was no significant difference between the groups for intelligence. The results of this test are given in the form of predicted reading grades and " should be regarded by the teacher as tentative."

This test is clearly set out in bold type. Drawings are adequate in size but sometimes difficult to identify. Test 4 is poorly spaced. Practice items are included for all tests except that of memory of geometric forms.

2. † **Diagnostic Reading Tests.** Survey Section: Kindergarten—Fourth Grade (1957). Committee on Diagnostic Reading Tests, Inc., 419, West 119th Street, New York 27, New York.

Suitability: Kindergarten—Grade 1 (5-6-year-olds).
Content: Two booklets:
(1) *Reading Readiness, Booklet Form B.* Five tests: relationships [(*a*) making figures, (*b*) marking figures]; eye-hand and motor co-ordination—left to right approach (copying); visual discrimination (seeing likenesses in figures, seeing differences in words); auditory discrimination (initial sounds); testing vocabulary (pictures and numbers).
(2) *Booklet 1: Grade 1. Form A.* Four tests: visual discrimination (seeing differences); auditory discrimination (initial and end sounds, silentness—letters heard/not heard); vocabulary (sight words, matching words with pictures and numbers, writing names of objects); story reading (word attack, comprehension).
Time: No timing is given.
Suggested group size: No group size is suggested.
Manual: A duplicated manual with separate directions (copyright 1957) is provided.

Research is still in progress on this test. A re-check on the reliability of part and total scores, an examination of relationships between teachers' predictions and test scores, and a study of the relationship between grades given in reading at end of first and second half of the year and test scores, are planned.

The second edition of the Reading Readiness Booklet printed this year, is to include changes in format and wording of directions.

The authors claim that this is the only test which provides reliable norms on readiness skills, although it may be argued that norms are less relevant to a diagnostic test, concerned with the state of an individual's abilities, than to an attainment test comparing the individual's level with his group. The tests are supposed to be used by the teacher to determine areas in which children are and are not ready, in conjunction with the activities of a play nature described in Reading Exercises, Level O, which will " build in " readiness in the deficient areas.

The appearance of the tests could be improved. They are printed on newsprint since the booklets are considered by the authors to be expendable. To use expensive paper would increase the cost of the test, but newsprint is very flimsy and probably not suitable for young children's use Drawings are clear and recognisable but sometimes poorly spaced. The size of print varies. from one test to another in the same booklet. Some sub-tests may be too long for young children.

3. **Gates Reading Readiness Test** (1939).
Arthur I. Gates, Bureau of Publications, Teachers' College, Columbia University, New York.

Suitability: Grade 1 (6-year-olds), but this test may be given at end of kindergarten.
Content: Five tests: picture directions; word matching; word-card matching; rhyming; letters and numbers (an individual test).
Time: The test is not timed (approximately 45 minutes).
Suggested group size: None given. Probably 10-15 maximum.
Manual: The manual (copyright 1939, revised 1942) contains a bibliography.

Studies described in the *Elementary School Journal*, Vols. 38 and 40, were used to obtain test items. The average correlation between test scores (obtained beginning of term and scores on *Gates Reading Tests*, Types I and II, at end of term) was +.706 (.89, .91, .78, .69, .59, .57). No information is available on the size and composition of the sample used though it is stated to be drawn from seven New York City public school classes. Five classes from schools in Columbia produced a median correlation of .76 (.79, .76, .76, .63, .53), but no data is provided on the size or composition of the sample nor on the reading test used. When scores on the *Pintner-Cunningham Intelligence Test* were added to the Reading Readiness score, multiple correlations giving an average figure of .76 (.93, .82, .80, .69, .67, .64, .77) were obtained, increasing the co-efficients in four and not at all or slightly on three of the seven New York City classes. Gates recommends that when an intelligence test is used it should be given about the same weighting as any one of the five sub-tests in his Reading Readiness Test.

The reliability co-efficient for the whole test is .974 (Split-half of each test Spearman-Brown formula) on a sample of 174 New York City children tested at the beginning of first grade. (Individual test reliabilities are: picture directions .84; word matching .78; word-card matching .82; rhyming .84; letters and numbers .96.)

There is no information in the manual on the procedure adopted to obtain norms, but presumably they were based on the above data.

Some of the test pictures are too small and detailed for young children, but the layout of words is clear and simple. Construction of word-cards for the word-card matching test is time-consuming, and this test procedure probably is not suitable for young children.

4. † **Harrison-Stroud Reading Readiness Profiles** (1955).
M. Lucile Harrison and James B. Stroud. Houghton Mifflin Company, Boston.

Suitability: Grade 1 (6-year-olds).
Content: Six tests: using symbols; making visual discriminations (attention-span controlled, uncontrolled); using the context; making auditory discriminations; using context and auditory clues; giving the names of the letters (being an individual test).
Time: The test is not timed (approximately 1½ hours, but it can be given in three half-hour sessions).
Suggested group size: 12-15.
Manual: A manual (copyright 1950, 56) is provided.

The test items were selected on the basis of the difficulty and discrimination index for each item, from a pool of items tested on a sample of 430 first grade children in one particular city. Retained items had an average discrimination index of .53. The test was standardised on a sample of 221 children from one city in 1950, and five years later a further standardisation was completed on 1,400 children from 32 communities in 28 different states.

No information is available on the reliability of the test. About validity, the authors state that " since the various tests were chosen to be direct measures of the specific skills that a pupil needs in beginning to learn to read, validity was built into the tests from the beginning." Selection of items is justified on the high value of the average discrimnation index, and therefore no data exists concerning the prognostic value of the scores when used alone or in combination with intelligence scores.

This test determines whether specific readiness skills are sufficiently well developed for the pupil to profit from reading instruction using a reader in a reading series, and to find in which of the skills he needs further training. The battery of tests is most attractively set out and interesting use has been made of colour in the printing, layout and carefully prepared directions which include adequate practice items.

5. † **Lee-Clark Reading Readiness Test** (1951 Revision)
J. Murray Lee and Willis W. Clark. California Test Bureau, 5916 Hollywood Boulevard, Los Angeles 28, California.

Suitability: Kindergarten and Grade 1 (5-6-year-olds).
Content: Four tests: recognition of similarities in letter forms; recognition of differences in letter forms (1943 Revision); vocabulary and concepts; recognition of similarities and differences in letter and word forms.
Time: The test takes about 15 minutes).
Suggested group size: 10-15.
Manual: A manual (copyright 1951) is provided and includes a bibliography.

The correlation of test scores (1931 edit.) with the *Lee-Clark Reading Tests—Primer* was .67. (N=72). In another group of 374 children (of above average ability) the correlation was .43; this is explained as due to the smaller proportion of children with low reading readiness. The correlation between the Test (1943, 1951 Revisions) and the *California Test of Mental Maturity, Pre-Primary Series* was .65 (N=377). In 1950, a correlation of first grade predictive measures (*Lee-Clark Reading Readiness Test* and *Pintner-Cunningham Intelligence Test*) with Sixth Grade Reading Achievement (*California Reading Test*) was .464 (N=275).

The reliability has been determined by using the split-halves method on scores of 170 entering first grade pupils corrected for range, and this gave values varying between .83 and .94 for the sub-tests, and .93 for the total score.

The norms given are based on 5,000 cases, and two sets are provided for use with children tested shortly after entering first grade or three or four months prior to entering first grade.

The test is short enough to be completed at one sitting and easily scored. The prominence given to capital letters might be questioned. Concepts such as " the empty boat " in the vocabulary test probably involve considerations other than strictly those of vocabulary.

6. **Metropolitan Readiness Tests: Form R and Form S** (1949)
Gertrude H. Hildreth and Nellie L. Griffiths. World Book Company, Yonkers-on-Hudson, New York; and Chicago, Illinois.

Suitability: End of Kindergarten or beginning Grade 1 (5½-6-year-olds).
Content: Six tests: word meaning; sentences; information; matching; numbers; copying. This test is available in two forms and includes a number readiness and a draw-a-man test (10 minutes).
Time: The test takes one hour.
Suggested group size: Up to 15.
Manual: A manual (copyright, 1948, 49) is provided and includes a bibliography.

First published in 1933, these tests have since been improved both in format and procedures. The three experimental forms of the test, including both new items and those previously used, were given to 2,600 first grade children, the difficulty and validity scores for each item being used to eliminate ineffective items and to provide items for the two final forms, carefully balanced for difficulty. The equivalence of the two forms was checked by a try-out on 1,500 first grade children who were given both.

The correlation between the Test (1948, Tests I–4) and the (average) Reading score on the Primary I Battery of the *Metropolitan Achievement Tests* given six months later, was .475. Separate correlations for the sub-tests varied from .341 (information test) to .486 (matching) on a sample of 487. Additional investigations of the validity of the tests are in progress.

A reliability coefficient of .828 was obtained between the Reading Readiness scores on the alternative forms, administered a few days apart. (Average N=195, beginning first grade children.)

The norms were based on 15,081 white children from 56 communities in 26 states. Tables are provided by which the total readiness score (total raw score) can be translated into a percentile rank, and the reading readiness, number readiness, and the total readiness score translated into a letter rating with verbal descriptions.

The battery includes a test of number readiness and the optional draw-a-man test for determining stages of mental development. The test of information seems very similar to that of a test of mental maturity. Although particular attention has been paid to the drawings, many are still too small and detailed for young children. Some items and words, familiar in the American context, would prove more difficult for English children, e.g. hatchet, moccasin, May basket, Hallowe'en, drug store, Fourth of July.

7. † **Murphy-Durrell Diagnostic Reading Readiness Test** (1949)
HELEN A. MURPHY and DONALD D. DURRELL. World Book Company, Yonkers-on-Hudson, New York; and Chicago, Illinois.

Suitability: Grade 1 (6-year-olds).
Content: Three tests: auditory discrimination; visual discrimination; and learning rate.
Time: The test is untimed (approximately one hour).
Suggested group size: No group size is given.
Manual: A manual (copyright 1949) is provided.

On the basis of individual studies of some four thousand children who had experienced difficulty in learning to read, the authors concluded that the important causes of failure were lack of auditory discrimination of word elements, lack of visual discrimination of differences between words, and the improper adjustment of instruction to learning rate. The present form of the two discriminating tests was based on data of item difficulty obtained in test try-outs. The third sub-test, that of learning rate, determines the number of words, from a selected list, each child is able to learn in one day under standard conditions of presentation. The authors experimented with tests varying in length from 5 to 12 words, finally choosing a test of 10, as the most suitable length. There is no evidence given for this decision, although they do explain their considerations in regard to the choice of words.

No evidence of test validity is provided but the authors, drawing on their experience and on other experimental data demonstrate the importance of the assumptions upon which the test is based.

The reliability (split half) of the Auditory Test was .96, the Visual Test, .95 (N=225 first grade children).

No norms are given for the test of learning rate. Percentile norms are given for the other two tests, based on the scores of 5,000 first grade children, about half coming from Boston public schools and half from eight communities in five states, mostly in the New England area.

The use of flash cards for the visual test may prove distracting for young children, who may find it difficult to refocus each time on the well-filled page of items. Words used are carefully graded in difficulty but it is doubtful whether all children would be capable of continuing the test over the page without instructions to do so. Advocates of reading for meaning and those who teach by using children's interests would probably criticise the learning rate test.

8. † **Reading Aptitude Tests. Primary Form** (1935)
MARION MONROE. Houghton Mifflin Company, New York.

Suitability: Grade 1 entrants (6-year-olds).
Content: Eight group and nine individual tests: the group tests include three visual, two motor, two auditory and one language test; the individual tests include one auditory, two articulation, one language, one motor, and laterality tests.
Time: The group tests take 30-40 minutes; the individual tests 10-15 minutes.
Suggested group size: The recommended group size is 10-12.
Manual: A manual (copyright 1935) is provided.

The predictive value was determined by correlating percentile scores made on the test on entering first grade with scores made on Gray's *Oral Paragraph* and the *Iowa Word Test* given at the end of the year. The composite reading attitude percentile score proved the best predictive item (.75) followed by the auditory (.66), visual (.60), articulation (.57), language (.50), and motor tests (.50), (N 85). When left-eye preference was considered separately, this test had some significance in that half the children found in the lowest quartile on the reading tests were left-eyed compared with thirty-six per cent. of those in the upper quartile. The norms show that high and low scores on the total test are good predictors of success or failure in beginning to read.

The reliability co-efficient for the entire test was .87, corrected by the Spearman-Brown formula (split-half).

The norms were established on records of 434 children from $5\frac{1}{2}$-$8\frac{1}{2}$ years of age, data being obtained in the course of work on reading disabilities in co-operation with the Pittsburg Public schools.

The test is used both as a diagnostic and as a reading readiness test. The use of flash cards (test of memory orientation of forms) is probably the only feasible method but is still likely to prove confusing to young children. The method of testing word discrimination is unnecessarily complicated, involving the identification of numbers in substitution for words in selecting the correct words for answers. It would be interesting to know the relative contribution of the sub-tests to the visual and auditory scores and the correlations between the individual sub-tests of visual and auditory discrimination and the criterion tests.

Other Group Tests of Reading Readiness

A number of other tests mentioned in accounts of research have been either discontinued, are out of print or otherwise are unavailable. Among these are:

(1) *Group Test of Reading Readiness, Dominion Tests.**
(2) Webster *Reading Readiness Test.*
(3) Betts *Ready to Read Test.*
(4) Stevens *Reading Readiness Test.*
(5) *New York Reading Inventory.*
(6) *Van Wagenen Reading Readiness Test.* (This has been discontinued and replaced by the School Readiness Test.)

---

*Since the above went to press, this test has become available. Its specification is as follows:

†**Group Test of Reading Readiness: The Dominion Tests** (1949). Long Form.
Department of Educational Research, Ontario College of Education, University of Toronto, 371 Bloor Street West, Toronto, 5.
Suitability: Kindergarten—Grade 1 (5-6-year-olds).
Content: Five tests: discrimination of object, symbols, words, listening, remembering, observing; familiarity with word forms; memory for word forms; motor co-ordination and reproduction of drawing details.
Time: 50 minutes.
Suggested group size: Not more than 12-15.
A *Manual* is provided (1949, 51).

©
National Foundation for Educational Research in England and Wales.
Printed by King, Thorne & Stace Limited, 1-13 Jubilee Street, Brighton, 1,
and published by Newnes Educational Publishing Co., Ltd., Tower House, Southampton Street, Strand, London, W.C.2.,
for The National Foundation for Educational Research in England and Wales, 79 Wimpole Street, London, W.1.

Publications of the

NATIONAL FOUNDATION FOR EDUCATIONAL RESEARCH

BOOKS

1. A List of Researches in Education and Educational Psychology, 1918-48. By A. M. Blackwell, M.A., B.Sc., £1 1s. 0d.

2. The Allocation of Primary School Leavers to Courses of Secondary Education. First Interim Report. By A. F. Watts, M.A., D.Lit., and Patrick Slater, M.A., 7s. 6d.

3. A Survey of Rewards and Punishments in Schools. Based on Researches carried out by M. E. Highfield, M.A., Ph.D., and A. Pinsent, M.B.E., M.A., B.Sc., £2 0s. 0d.

4. The Educability of Cerebral Palsied Children. By M. I. Dunsdon, M.A., F.B.Ps.S., £1 1s. 0d.

5. A Second List of Researches in Education and Educational Psychology, 1949-51. By A. M. Blackwell, M.A., B.Sc., £1 1s. 0d.

6. Secondary School Entrance Examinations. By A. F. Watts and others, 6s. 6d. net, (cloth cased), 3s. 6d. (limp covers).

7. Lists of Researches in Education and Educational Psychology. Supplement I. 1952-53. By A. M. Blackwell, M.A., B.Sc., 10s. 6d.

8. Pupils' School Records. By Alice S. Walker, B.Sc., £1 1s. 0d.

9. Lists of Researches in Education and Educational Psychology. Supplement II. 1954-55. By A. M. Blackwell, M.A., B.Sc., 15s.

10. Admission to Grammar Schools. Third Interim Report on the Allocation of Primary School Leavers to Courses of Secondary Education. By Alfred Yates, B.A., B.Ed., and D. A. Pidgeon, B.Sc., £1 5s. 0d.

11. Lists of Researches in Education and Educational Psychology. Supplement III. 1956-57. By A. M. Blackwell, M.A., B.Sc., 15s.

12. Reading in the Primary School. By Joyce M. Morris, B.A., Ph.D., with a Statistical Appendix by P. M. Grundy, B.A., Ph.D., 15s. net.

Orders for the Foundation's Publications should be placed with its Publishers—

Newnes Educational Publishing Co., Ltd.
Tower House, Southampton Street, Strand, London, W.C.2

CONTENTS

PAGE

Articles:

Teaching the Mother Tongue to Backward and Subnormal Pupils. *R. Gulliford* 82

Highly Intelligent Children. *W. D. Wall* 101

Problems in Modern Language Teaching. *D. W. Bell* 112

Bilingualism in Wales: An Aspect of Semantic Organisation. *C. B. E. James* 123

Research Notes:

Improving Test Validity by Coaching. *Gina R. Ortar* 137

Selection for Secondary Technical Courses—A Report of a Pilot Investigation. *A. Yates and F. Barr* 143

Abstracts:

An Examination of Some Psychological Effects of Teaching English in Schools. *Muriel M. Kay* 149

An Enquiry into Factors Accompanying Secondary School Pupils' Interest in Science. *G. R. Meyer* 152

Bibliography:

Group Tests of Reading Readiness. *Elizabeth J. Standish* 155